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ABSTRACT

Designed to provide an advanced core of instruction in teaching farm business management, this curriculum guide for year 2 is intended for use as an adult program of instruction for a three-year period together with Farm Business Management I and III. (Volume I is available separately. See note.) The ten instructional units are presented in a format that includes eight basic components: performance objectives, suggested activities for teacher, information sheets, assignment sheets, transparency masters, tests, and answers to tests and assignment sheets. These units of instruction are contained in this volume: Income Tax Forms, Net Worth Statements, Income Statements; Whole Farm and Detailed Entreprise Analysis; General Marketing and Forward Contracts; Hedging; Capital Budgeting; Machinery Economics; Income Tax Management; and Year-End Closing and Accuracy Check of Records. (YLB)

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VOCATIONAL AGRICULTURE EDUCATION

FARM BUSINESS MANAGEMENT II

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STILLWATER, OKLAHOMA

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FARM BUSINESS MANAGEMENT
VOLUME II

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Developed by the
Curriculum and Instructional Materials Center
For the Division of Vocational Agriculture Education
Ralph Dreessen, State Supervisor
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1981

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FOREWORD

This publication is designed to provide an advanced core of instruction in teaching farm business management in Oklahoma.

Teachers may use these materials to assist them in providing instruction for producers currently engaged in production agriculture. Agriculturists in today's fast paced world of economics must not only be knowledgeable and well informed in matters relating to production agriculture, but they must also be well versed in management and economics principles and techniques to make decisions required in their rapidly changing occupations.

Appreciation is expressed to the many individuals who helped in the development of this publication.

Francis T. Tuttle, State Director
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and Technical Education

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PREFACE

Farm Business Management II is intended for use as an adult program of instruction for a three-year period with *Farm Business Management I* preceding it and *Farm Business Management III* following it. Year II will be of considerable benefit to instructors of vocational agriculture who wish to supplement agriculture core curriculum previously developed by the Oklahoma State Department of Vocational and Technical Education in the instruction of farm and ranch management.

Every effort has been made to make this publication basic, readable, and usable. Admittedly, the publication does not cover every area of farm management, but it does provide the basics and it gives the student the opportunity to progress without a great deal of repetition.

Some areas of farm management have been left out of this publication because they have already been covered in *Farm Business Management I* or because they require that a foundation be laid in certain areas before they may be covered in *Farm Business Management III* units of instruction. Year I units go into more detail on record keeping, farm credit, and income tax management. Year III units will cover areas such as risk management , farm planning, farm business organizations, and estate planning. *Farm Business Management II* units focus on analysis of farm records, marketing of farm products, capital budgeting, machinery economics, and income tax management. It is recommended that the *Oklahoma Young Farmer Record Book* be used in conjunction with the teaching of Year II units of instruction.

Individual on-farm instruction is the core of the course in Farm Business Management. Each farm represents a unique set of resources which the successful farmer or rancher must combine to produce a farm income sufficient to meet the needs and desires of the farm family. General principles of farm management and techniques of analyzing the farm business can be taught in the classroom. The application of the principles takes place on the farm.

A successful farm business management education program is an excellent foundation for continuing agricultural education in the community. *Farm Business Management II* curriculum is an excellent source of instructional information that will improve programs and assist in preparing the farm family to achieve farm business and family objectives and goals.

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Appreciation is expressed to the many individuals who contributed their time and talents to the development of this publication.

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My sincere appreciation is expressed to Greg Pierce, Assistant Coordinator of the CIMC, for the technical assistance and support in the development of this material, and to Bob Patton, coordinator, for the opportunity to develop this material.

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A thank-you goes to my secretary, Louise Sumpter, and former secretary Julie Rogers, who worked long and hard to keep me on the right track.

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Much appreciation is expressed to the Graphics Division for services offered during the development and publication of the *Farm Business Management II* curriculum.

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Special appreciation and gratitude goes to former Farm Business Management curriculum writer Jim Hodgens, for developing the outline and material on which this manual is based, and for the many times he thought this curriculum would never be completed.

USE OF THIS PUBLICATION

Instructional Units

Farm Business Management II curriculum includes ten instructional units. A standard format was established in 1970 for the development of instructional materials for all Oklahoma vocational teachers. This format includes eight basic components which form a unit of instruction: performance objectives, suggested activities for the teacher, information sheets, assignment sheets, job sheets, transparency masters, tests, and answers to tests and assignment sheets. Depending on the specific objectives, transparency masters, assignment sheets, and job sheets may or may not be included in the unit of instruction.

All of the unit components "zero in" on measurable and observable learning outcomes. Teachers are encouraged to supplement, personalize, localize, and motivate with these materials in order to develop a complete teaching-learning process.

Units of instruction are designed for use in more than one lesson or class period of instruction. Careful study of each unit of instruction by the teacher will help him or her determine:

A. Amount of material that can be covered in each class period
B. Skills which must be demonstrated
    1. Supplies and equipment needed
    2. Amount of practice needed
    3. Amount of class time needed for demonstrations
C. Supplementary materials, such as pamphlets and filmstrips, that must be ordered
D. Resource people who must be contacted

Performance Objectives (white pages)

Each unit of instruction is based on the performance needed for successful employment in an occupational area. Performance objectives are stated in two forms: unit objectives, stating the subject matter to be covered in a unit of instruction, and specific objectives, stating the student performance necessary to reach the unit objective.

Since the objectives of the unit provide direction for the teaching-learning process, it is important that teachers and students have a common understanding of the intent of the objectives. Following is a list of performance terms, their meanings, and behavioral synonyms which may have been used in this material.

A. Name--The individual supplies a name for objects, events, or people

Behavioral synonyms: Label, list, letter, record, reiterate, repeat, write

B. Identify--The individual selects a named, described, or pictured object by pointing to it, touching it, picking it up, or selecting it

Behavioral synonyms: Select, mark, match, choose, judge

C. State a rule--The individual communicates a relationship or principle which could be used to solve problems or perform a task

D. Apply a rule--The individual supplies an answer to a problem by using a stated relationship or principle

Behavioral synonyms: Solve, calculate

E. Describe--The individual relates sufficient characteristics or properties of an object or event so that a second individual will be able to state what is being discussed

Behavioral synonyms: Define, discuss, interpret, recite, tell how, tell what happens when

F. Distinguish--The individual selects an object or event from two or more which are easily confused

Behavioral synonyms: Discriminate, differentiate

G. Order--The individual arranges three or more objects or events in a sequence based on a stated property

Behavioral synonyms: Arrange, sequence, list in order, classify, divide, isolate, sort

H. Construct--The individual makes a physical object, a verbal statement, or a drawing

(NOTE: Construct is used when the finished product or result is important.)

Behavioral synonyms: Draw, make, build, design, formulate, reproduce, transcribe, convert, put together, compile

I. Demonstrate--The individual performs several operations necessary to carry out a specified process

(NOTE: Demonstrate is used when it is desirable to watch the student perform a task, one of the highest levels of student performance.)

Behavioral synonyms: Show your work, show procedure, perform an experiment, perform the steps, operate, remove, replace, turn off/on, (dis) assemble, (dis) connect

The objectives should be provided for students and stressed throughout the teaching-learning process. This will help answer any questions concerning performance requirements for each instructional unit. The objectives can also help determine teaching strategies and instructional methods. Prepare for each unit by deciding how each objective can best be taught.

The objective sheet may be also used as a quick pretest to determine prior knowledge of students and to determine whether further study or activities are necessary. Teachers should feel free to modify, delete, or add objectives in order to meet the needs of the students and community. When changes in objectives are made, the teacher should remember to supply the needed information, assignment and/or job sheets, and criterion test items.

INCOME TAX FORMS
UNIT I

UNIT OBJECTIVE

After completion of this unit, the cooperator should be able to identify and use various income tax forms needed in the farm business. This knowledge will be evidenced by completion of assignment sheets and unit test with a minimum of 85 percent accuracy.

SPECIFIC OBJECTIVES

After completion of this unit, the student should be able to:

1. Match terms associated with income tax forms to the correct definitions.
2. Select from a list factors to consider in determining filing status.
3. State when to file your income tax form.
4. Discuss factors to consider in filling out Form 1040.
5. Match types of income tax forms usually used by farmers to their correct descriptions.
6. Complete Schedule F, Form 1040.
7. Compute employer's annual tax return for agricultural employees using Form 943.
8. Compute Social Security self-employment tax.
9. Compute investment tax credit on Form 3468.
10. Determine capital gains and losses on Form 4797 and Schedule D.

INCOME TAX FORMS
UNIT I

SUGGESTED ACTIVITIES

I. Suggested activities for the instructor:

  A. Provide cooperators with objective sheet.

  B. Provide cooperators with information and assignment sheets.

  C. Discuss unit and specific objectives.

  D. Discuss information and assignment sheets.

  E. Point out that these forms and instructions change fairly often. **Cooperators should always use the latest information available and use the current year's income tax forms for assignment sheets.**

  F. Pass out Form 1040, Schedules A and B, to cooperators. Let cooperators distinguish between the two.

  G. Have a tax accountant or an Internal Revenue Service representative as a guest speaker.

  H. Discuss current changes in income tax laws.

  I. Assist cooperator in completing the *Oklahoma Young Farmer Record Book* and in preparing an income tax worksheet during the on-farm visit.

  J. During on-farm visit assist cooperator with completing computerized year-end analysis input forms.

  K. Remind cooperator of tax filing due dates.

  L. Give test.

  M. Critique test.

  N. Reteach, if necessary.

II. Instructional materials:

  A. Objective sheet

  B. Information sheet

  C. Assignment sheets

    1. Assignment Sheet #1--Complete Schedule F, Form 1040

    2. Assignment Sheet #2--Compute Employer's Annual Tax Return for Agricultural Employees Using Form 943

3. Assignment Sheet #3--Compute Social Security Self-employment Tax
4. Assignment Sheet #4--Compute Investment Tax Credit on Form 3468
5. Assignment Sheet #5--Determine Capital Gains and Losses on Form 4797 and Schedule D

D. Answers to assignment sheets

E. Test

F. Answers to test

III. Unit references:

(NOTE: IRS forms and instructions may change during the course of the year. Always use the latest information available.)

A. *Federal Tax Guide*. Volume 1. Chicago, Illinois: Commerce Clearing House Inc., 1981.

B. Wheeler, Jon D. *Tax Desk Book for Farming and Ranching*. Englewood Cliffs, New Jersey: Institute for Business Planning, 1978.

C. *Farmers Tax Guide: 1980 Edition.* Publication 225 rev. Washington, D.C.: Department of the Treasury, Internal Revenue Service, 1980.

D. *Your Federal Income Tax: 1980 Edition*. Publication 17, rev. Washington, D.C.: Department of the Treasury, Internal Revenue Service, 1980.

E. *Instructions for Form 4797: 1980 Edition*. Washington, D.C.: Department of the Treasury, Internal Revenue Service, 1980.

F. *Declaration of Estimated Tax for Individuals: 1980 Edition*. Washington, D.C.: Department of the Treasury, Internal Revenue Service, 1980.

G. *Employer's Annual Tax Return for Agriculture Employees: 1980 Edition.* Washington, D.C.: Department of the Treasury, Internal Revenue Service, 1980.

H. *Computation of Social Security Self-Employment Tax: 1980 Edition.* Washington, D.C.: Department of the Treasury, Internal Revenue Service, 1980.

I. *Computation of Investment Credit Form 3468: 1980 Edition.* Washington, D.C.: Department of the Treasury, Internal Revenue Service, 1980.

INCOME TAX FORMS
UNIT I

INFORMATION SHEET

I. Terms and definitions

A. Taxable income--Adjusted gross income less the sum of excess itemized deductions and personal exemptions

(NOTE: A corporation's taxable income is gross income minus the deductions allowed by law.)

B. Estimated tax--Sum of the expected income tax and self-employment tax minus expected withholdings and credits

C. Amoritization--Repayment of a loan with a regular series of payments over a specified period of time

D. Capital assets--For income tax purposes, any property owned and used for personal purposes, pleasure, or investment

Examples: Home; household furnishings; family automobile; stocks, bonds

E. Ordinary asset--Any asset that is not a capital asset

Examples: Items held for resale; land and depreciable properties used in your farming business; items held for sale in the ordinary course of your business

F. Property used in farming--Property used in the farming business or for the production of rents or royalties and held more than one year; any property held more than one year that is subject to involuntary conversion

(NOTE: Certain property used in farming known as *Section 1231 property*. A gain or loss on the sale, exchange, or involuntary conversion of Section 1231 property may be a capital gain or loss or an ordinary gain or loss as reported on Form 4797.)

G. Capital gain--Gain realized from the sale of a capital asset when the asset is sold for more than its initial purchase price

H. Capital loss--Loss realized from the sale of a capital asset when the asset is sold for less than its initial purchase price

I. Depreciation--Decline in the value of an asset due to wear and tear, action of elements, and obsolescence

J. Adjusted basis--Original cost of an asset plus the value of improvements or alterations less the cost of depreciation, losses, or depletion

(NOTE: Adjusted basis is used to calculate depreciation.)

INFORMATION SHEET

K. Depletion--The using up of natural resources by the process of mining, quarrying, drilling, and felling

Examples: Coal; metals; minerals; stone; gravel; oil; gas; timber

(NOTE: The depletion deduction allowed in determining the income from natural resources returns to the owner or operator's capital investment prorata over the productive life of such resources.)

L. Investment--Laying out of funds in a business with the view of obtaining an income or profit

M. Investment tax credit--Credit against or reduction in federal income tax equal to 10 percent of qualified investments

N. Sole proprietorship--An individual who owns, manages, assumes all the risk, and derives all the profits from a business

O. Partnership--Created when two or more persons join together to conduct a business and to share in its profits and losses

P. Corporation--Legal entity separate and distinct from shareholders who own it, from the individuals who manage it, or from its employees

Q. Fiduciary--Person who occupies a position of special confidence toward others

Examples: Trustee; executor; administrator; receiver; committee or guardian of an incompetent

II. Factors to consider in determining filing status

(NOTE: IRS forms and instructions may change during the year. Always use the latest information and forms available. Factors considered are for 1980.)

A. Cooperators must file if single, legally separated, divorced, or married but living apart from their spouse for the entire year; and earn at least $3,300, if under the age of 65, or $4,300, if over the age 65

B. Cooperators must file if they can be claimed as a dependent on their parents' return and have taxable dividends, interest, or other unearned income of $1,000 or more

C. Cooperators must file if they are widows or widowers with dependent children and earn over $4,400, if under age 65, or over $5,400, if over age 65

D. Cooperators must file if married, filing jointly, living with their spouse and earn at least $5,400, if both are under age 65, $6,400, if one is 65 or older, or $7,400, if both are 65 or older

INFORMATION SHEET

E. Cooperators must file if self-employed and net earnings from self-employment are at least $400

(NOTE: A cooperator must file an income tax return if she or he has gross income that meets the statutory filing levels. If a cooperator is not required to file a return, then a return should be filed to receive a refund if income tax was withheld.)

III. When to file your income tax form

(NOTE: You have two choices on when to file if your tax year starts January 1, and if at least two-thirds of your estimated gross income for this tax year is from farming, or if at least two-thirds of the gross income for last year was from farming.)

A. File an estimate of your tax and pay this amount by January 15 of the following year, then file the return for the prior year and pay any balance due by April 15

(NOTE: Fiscal-year cooperator's due date is the first day of the third month following the close of the taxable year.)

B. File your prior year's return and pay the tax on or before March 1

(NOTE: If you meet the gross income test and file your prior year's return and pay the tax by March 1, you will not have to pay a penalty for underpaying estimated tax.)

IV. Factors to consider in filling out Form 1040

A. Determine whether the individual was married or single

(NOTE: In most cases, an individual will pay less tax if filing a joint return instead of separate returns.)

B. One exemption is allowed for the individual filing the return; exemptions also are allowed for a spouse, being 65 or over and blind, and having dependents, such as children, mother, or father

C. All wages should be reported

Examples: Employer supplemental unemployment benefits; salaries; bonuses; commissions; fees and tips; dividends; interest from savings and loan associations; interest on tax refunds; interest on bank deposits; profits from business; share of profits from partnerships and small business corporations; pensions; annuities; endowments; profits from sale or exchange of real estate, securities, or other properties; rents and royalties; prizes and awards

INFORMATION SHEET

D. Some income may not need to be reported

Examples: Disability retirement payments and other Veteran's Administration benefits; dividends on veteran's insurance; life insurance sums received at a person's death; worker's compensation; interest on certain state and municipal bonds; federal Social Security benefits

E. Cooperator may adjust taxable income with moving expenses, employee business expenses, and payments to Keogh (H.R.10) Retirement Plan

V. Types of income tax forms usually used by farmers

(NOTE: Additional information may be found in IRS Publication 225, *Farmer's Tax Guide*.)

A. Form 1040--Your individual income tax return

B. Schedule A (1040)--List of your nonbusiness deductions

C. Schedule B (1040)--List of your interest and dividend income

D. Schedule F (1040)--List of all your farm income and deductions which determines your net farm profit or loss

E. Schedule SE (1040)--Used to figure your Social Security self-employment tax

F. Schedule D (1040)--Used to show your gains and losses from sales of capital assets

G. Form 4797--Used to report gains and losses from the sale or exchange of business property and from certain involuntary conversions

H. Form 4684--Used to report gains and losses from casualty and theft of business and personal use property

I. Form 3468--Used to figure your investment credit

J. Form 4255--Used to figure the tax from recomputing a prior year's investment credit

K. Form 4136--Used to figure the tax credit for federal tax on gasoline, special fuels, and lubricating oil

L. Form 943--Employer's annual tax return for agricultural employees

(NOTE: Form 943 must be filed before January 31 of the following year if you were required to withhold and pay Social Security tax or if you withheld income tax under voluntary withholding agreements on farm labor wages paid during the prior calendar year. If you made timely tax deposits, you may file on or before February 10 of the following year.)

M. Form 1040-ES--Used to declare an estimate of your tax if you choose to estimate

INFORMATION SHEET

N. Form 2210-F--Used by farmers to figure any underpayment of estimated tax and the underpayment penalty

O. Form 1096--Used to summarize and transmit the various 1099 forms

P. Form 1099--Information return used to report the total payments of $600 or more you make during the year to another person in the course of your trade or business

(NOTE: Report on Form 1099-INT interest payments of $600 or more. Payments of $600 or more made for rents, royalties, prizes, awards and other payments that are not for services should be made on Form 1099-MISC. Report on Form 1099-NEC payments of $600 or more for fees, commissions, prizes, awards, or any other compensation for services paid to persons who are not your employees. Separate copies of each Form 1099 must be prepared for each person.)

Q. Form 6251--Used to figure the alternative minimum tax

R. Form 5695--Used to figure your residential energy credit if you had energy saving items installed in your principal residence

S. Form 940--Employer's annual federal unemployment tax return

(NOTE: If you were subject to the FUTA tax, the return must be filed by January 31 of the following year. If you made timely deposits of the FUTA tax, you may file on February 10 of the following year.)

T. Form W-2--Wage and tax statement which must be prepared for every employee to whom you paid cash wages subject to the employee Social Security tax or from whose wages, in voluntary agreement with the employee, you withheld federal income tax

(NOTE: You also must prepare a Form W-2 for every employee to whom you paid any amount for services, including the cash value of any payment you made that was not in cash if you are in a trade or business. Send Copy A of each Form W-2 to the Social Security Administration with a completed Form W-3, *Transmittal of Income and Tax Statements*, on or before the last day of February. Copies B and C of Form W-2 must be given to the employee by January 31.)

U. Form 2290--Federal use tax return on highway motor vehicles which must be filed if you have a truck or truck-tractor registered in your name that is a highway motor vehicle, if it is required to be registered for highway use, if it is actually used at least once on a public highway, and if it comes within one of the taxable categories as to type and weight

V. Form 1065--Information return showing the income and deductions of a partnership

(NOTE: Partnerships pay no income tax. Each partner's distributive share of the partnership income, gain, loss, so forth, must be included on the individual's tax return.)

INFORMATION SHEET

W. Form 1120--Corporation income tax return filed by ordinary corporation

(NOTE: Additional information may be found in IRS publication 542, *Tax Information on Corporations*.)

X. Form 1120-S--Small business corporation income tax return used by Subchapter S corporations

(NOTE: Additional information may be found in IRS Publication 589, *Tax Information on Subchapter S Corporations*.)

INCOME TAX FORMS
UNIT I

ASSIGNMENT SHEET #1--COMPLETE SCHEDULE F, FORM 1040

NAME__________________________________ SCORE________________

You will need to file Schedule F, Form 1040, if you qualify under the IRS definition of *farmer* or if you have farm income.

Fill in the following Schedule F, Form 1040, according to the information given.

1. Cash receipts
   a. Sold 50 stocker cattle weighing 700 pounds @ 80¢/lb. for $28,000.00; originally bought the 50 head @ 500 pounds @ 90¢/lb. for $22,500.00
   b. Sold 135 calves raised from the herd; 70 were steer calves selling @ 500 pounds for 83¢/lb., and 65 were heifers selling @ 500 pounds for 75¢/lb.; total revenue was $53,425.00
   c. Sold 40 spring lambs weighing 90 pounds @ 60¢/lb.; total revenue was $2,160.00
   d. Sold 14 raised 715 pound yearling steers @ $480.00 each for a total of $6,720.00
   e. Sold 20 feeder pigs @ 30 pounds for $35.00 each; total revenue was $700.00
   f. Sold 156 dozen eggs @ 70¢/dozen; total revenue was $109.20
   g. Sold $300.00 of vegetables to local grocer
   h. Sold 200 tons prairie hay @ $50/ton; total revenue was $10,000.00
   i. Performed custom combine operation @ $10.00 per acre for neighbors; cut 1,500 acres; total revenue was $15,000.00
   j. Federal gasoline tax credit from previous year was $54.00
2. Cash expenses
   a. Hired labor for $4,000.00
   b. Machinery and equipment repairs and maintenance, including hay baler, tractor, and combine used in custom operation, totaled $10,489.00
   c. Interest expense on operating notes for stocker calves was $1,125.00; farm land payment interest was $9,000.00; farm operating loan interest was $3,000.00
   d. Rent for pasture was $1,500.00

ASSIGNMENT SHEET #1

e. Feed purchased

    1) Stockers @ $9,085.00
    2) Cow-calf @ $8,950.00
    3) Sheep @ $1,024.00
    4) Feeder pigs @ $1,500.00
    5) Chicken feed @ $90.00

f. Seeds purchased @ $30.00

g. Chemicals for prairie hay (2-4-D) @ $239.00

h. Machine hire (hay operation) @ $600.00

(NOTE: Form 1096 has been completed.)

i. Miscellaneous supplies purchased @ $9,400.00

j. Veterinary fees @ $350.00

k. Farm share of gasoline, fuel, oil @ $4,000.00

l. Farm share of taxes @ $600.00

m. Farm share of insurance @ $800.00

n. Farm share of utilities @ $1,200.00

o. Hay hauling (truck rental) @ $800.00

(NOTE: Form 1096 has been completed.)

p. Farm magazines @ $65.00

q. Farm Business Management program tuition @ $60.00

r. *Oklahoma Young Farmer Record Book*, pencils, papers and other business materials needed to run farm business @ $80.00

3. 1980 depreciation

(NOTE: Depreciation is on file in farm records.)

a. 1/2-ton truck @ $750.00

b. 2-ton flat bed truck @ $1,000.00

c. Tractor @ $500.00

ASSIGNMENT SHEET #1

d. Tractor @ $750.00

e. Hay baler @ $750.00

f. Combine @ $2,450.00

g. Miscellaneous equipment @ $2,000.00

h. Breeding livestock @ $3,000.00

ASSIGNMENT SHEET #1

(85)

SCHEDULE F
(Form 1040)
Department of the Treasury
Internal Revenue Service

Farm Income and Expenses

▶ Attach to Form 1040, Form 1041, or Form 1065.
▶ See Instructions for Schedule F (Form 1040).

1980
17

Name of proprietor(s)

Social security number

Farm name and address ▶

Employer identification number

Part I Farm Income—Cash Method

Do not include sales of livestock held for draft, breeding, sport, or dairy purposes; report these sales on Form 4797.

Sales of Livestock and Other Items You Bought for Resale

a. Description	b. Amount	c. Cost or other basis
1 Livestock ▶		
2 Other items ▶		
3 Totals		
4 Profit or (loss), subtract line 3, column c, from line 3, column b ▶		

Sales of Livestock and Produce You Raised and Other Farm Income

Kind		Amount
5 Cattle		
6 Calves		
7 Sheep		
8 Swine		
9 Poultry		
10 Dairy products		
11 Eggs		
12 Wool		
13 Cotton		
14 Tobacco		
15 Vegetables		
16 Soybeans		
17 Corn		
18 Other grains		
19 Hay		
20 Straw		
21 Fruits and nuts		
22 Machine work		
23 a Patronage dividends		▨
b Less: Nonincome items		▨
c Net patronage dividends		
24 Per-unit retains		
25 Nonpatronage distributions from exempt cooperatives		
26 Agricultural program payments: a Cash		
b Materials and services		
27 Commodity credit loans under election (or forfeited)		
28 Federal gasoline tax credit		
29 State gasoline tax refund		
30 Other (specify) ▶		
31 Add amounts in column for lines 5 through 30		
32 **Gross profits*** (add lines 4 and 31) ▶		

Part II Farm Deductions—Cash and Accrual Method

F

Do not include personal or living expenses (such as taxes, insurance, repairs, etc., on your home), which do not produce farm income. Reduce the amount of your farm deductions by any reimbursement before entering the deduction below.

Items		Amount
33 a Labor hired		
b Jobs credit		▨
c WIN credit		▨
d Total credits		
e Balance (subtract line 33d from line 33a)		
34 Repairs, maintenance		
35 Interest		
36 Rent of farm, pasture		
37 Feed purchased		
38 Seeds, plants purchased		
39 Fertilizers, lime, chemicals		
40 Machine hire		
41 Supplies purchased		
42 Breeding fees		
43 Veterinary fees, medicine		
44 Gasoline, fuel, oil		
45 Storage, warehousing		
46 Taxes		
47 Insurance		
48 Utilities		
49 Freight, trucking		
50 Conservation expenses		
51 Land clearing expenses		
52 Pension and profit-sharing plans		
53 Employee benefit programs other than line 52		
54 Other (specify) ▶		
55 Add lines 33e through 54		
56 Depreciation (from Part III, line 62)		
57 **Total deductions** (add lines 55 and 56) ▶		

58 Net farm profit or (loss) (subtract line 57 from line 32). If a profit, enter on Form 1040, line 19, and on Schedule SE, Part I, line 1a. If a loss, go on to line 59. (Fiduciaries and partnerships, see the Instructions.) 58

59 If you have a loss, do you have amounts for which you are not "at risk" in this farm (see Instructions)? ☐ Yes ☐ No

*Use amount on line 32 for optional method of computing net earnings from self-employment. (See Schedule SE, Part I, line 3.)

ASSIGNMENT SHEET #1

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Schedule F (Form 1040) 1980 18 Page 2

Part III **Depreciation** (Do not include your home, its furnishings, and other personal items.) If you need more space, use Form 4562.

Description of property (a)	Date acquired (b)	Cost or other basis (c)	Depreciation allowed or allowable in prior years (d)	Method of computing depreciation (e)	Life or rate (f)	Depreciation for this year (g)
60 Total additional first-year depreciation (do not include in items below) (see instructions for limitation) →						
61 Other depreciation:						
62 Totals			Enter here and in Part II, line 56 ▶			

Part IV **Farm Income—Accrual Method** (Do not include sales of livestock held for draft, breeding, sport, or dairy purposes; report these sales on Form 4797 and omit them from "Inventory at beginning of year" column.)

a. Kind	b. Inventory at beginning of year	c. Cost of items purchased during year	d. Sales during year	e. Inventory at end of year
63 Cattle				
64 Calves				
65 Sheep				
66 Swine				
67 Poultry				
68 Dairy products				
69 Eggs				
70 Wool				
71 Cotton				
72 Tobacco				
73 Vegetables				
74 Grain				
75 Fruits and nuts				
76 Other (specify) ▶				
77 Totals (enter here and in Part V below)	(Enter on line 86)	(Enter on line 87)	(Enter on line 79)	(Enter on line 78)

Part V **Summary of Income and Deductions—Accrual Method**

78 Inventory of livestock, crops, and products at end of year (line 77, column e)

79 Sales of livestock, crops, and products during year (line 77, column d)

80 Agricultural program payments: a Cash

b Materials and services

81 Commodity credit loans under election (or forfeited)

82 Federal gasoline tax credit

83 State gasoline tax refund

84 Other farm income (specify) ▶

85 Add lines 78 through 84

86 Inventory of livestock, crops, and products at beginning of year (line 77, column b)

87 Cost of livestock and products purchased during year (line 77, column c)

88 Total (add lines 86 and 87)

89 Gross profits* (subtract line 88 from line 85)

90 Total deductions from Part II, line 57 ▶

91 Net farm profit or (loss) (subtract line 90 from line 89). If a profit, individuals enter on Form 1040, line 19, and on Schedule SE, Part I, line 1a. If a loss, go on to line 92. (Fiduciaries and partnerships, see the Instructions.) 91

92 If you have a loss, do you have amounts for which you are not "at risk" in this farm (see Instructions)? ☐ Yes ☐ No

*Use amount on line 89 for optional method of computing net earnings from self-employment. (See Schedule SE, Part I, line 3.)

INCOME TAX FORMS
UNIT I

ASSIGNMENT SHEET #2--COMPUTE EMPLOYER'S ANNUAL TAX RETURN FOR AGRICULTURAL EMPLOYEES USING FORM 943

NAME______________________________ SCORE_______________

Every employer must file Form 943 if cash wages were paid to one or more employees who either received $150 or more in cash wages in a calendar year or who performed agricultural labor on 20 or more days during the year.

(NOTE: Services performed by a child under 21 working for his or her parent or an individual working for his or her spouse are not employment for purposes of FICA or FUTA taxes. This is true even if the child or individual is paid regular wages.)

After a return is filed, the IRS will mail you the form needed for future use.

Form 943 must be filed on or before January 31 for the preceding year.

(NOTE: If you have made deposits on this all year long, you may file on or before February 10. You also must prepare a W-2 for every employee to whom you paid cash wages subject to FICA tax and they must complete the Form W-4. Additional information may be found in IRS Publication 51, Circular A, *Agricultural Employer's Tax Guide*.)

Compute total FICA contributions on Form 943 using the information below.

1. You have determined that two employees, Jamee Noell Reid and Gregory Ervin Pierce were paid net wages of $5,632.20 and $657.09, respectively, last year. You withheld $367.80 from Reid and $42.91 from Pierce for their FICA contributions last year. Reid's Social Security number is 000-00-0001 and Pierce's Social Security number is 000-00-0002.

2. Your labor records show the following tax liability for each month:

   a. January--$61.30

   b. February--$61.30

   c. March--$61.30

   d. April--$61.30

   e. May--$61.30

   f. June--$104.21

   g. July--$104.21

   h. August--$61.30

   i. September--$61.30

ASSIGNMENT SHEET #2

j. October--$61.30

k. November--$61.30

l. December $61.30

3. You deposited $200.00 on April 25, $200.00 on June 27, $200.00 on September 26, and $200.00 on December 29 in an authorized commercial bank.

ASSIGNMENT SHEET #2

Form **943**
Department of the Treasury
Internal Revenue Service

Employer's Annual Tax Return for Agricultural Employees

(For Social Security (FICA) Taxes and Withheld Income Tax)

1980

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Your name, address, employer identification number, and calendar year of return. (If not correct, please change.) ▶

Name (as distinguished from trade name)

Trade name, if any

Address and ZIP code

Calendar Year
1980

Employer identification number

If address is different from prior return, check here ▶ ☐

1 Number of agricultural employees employed in the pay period that includes March 12, 1980 . . . . . . ▶

2 Taxable cash wages paid during the year . . . . .

3 FICA taxes (multiply line 2 by 12.26%) . . . . .

4 Adjustment of FICA taxes (attach statement—see instructions on page 4) . . . . .

5 FICA taxes as adjusted . . . . .

6 Federal income tax withheld (see instructions on page 2) . . . . .

7 Total taxes (add lines 5 and 6) . . . . .

8 Advance earned income credit (EIC) payments, if any (see Note on page 2) . . . . .

9 Net taxes (subtract line 8 from line 7) . . . . .

Record of Federal Tax Deposits

(See instructions for new deposit rules effective 1/1/81 on page 4)

If your total taxes are $2,000 or more for any month in 1980, attach a statement showing the tax liability, date of deposit, and amount of deposit for each quarter-month.

Deposit period ending:	I. Tax liability for month	II. Date of deposit	III. Amount deposited
Overpayment from 1979			
A January 31			
B February 29			
C March 31			
D April 30			
E May 31			
F June 30			
G July 31			
H August 31			
I September 30			
J October 31			
K November 30			
L December 31			
M Total for year (add lines A through L) . . .			
N Final deposit for 1980. (Enter "0" if you included the final deposit made for the year in item M)			

10 Total amount deposited for 1980 including final deposit and overpayment from 1979 (total of column III) . . .

Note: *If undeposited taxes at the end of 1980 are $200 or more, deposit the full amount with an authorized financial institution or a Federal Reserve bank according to the instructions on the back of Federal Tax Deposit Form 511. Enter this deposit in the Record of Federal Tax Deposits and include it on line 10.*

11 Undeposited taxes due (subtract line 10 from line 9—this should be less than $200). Pay to Internal Revenue Service . . ▶

12 If line 10 is more than line 9, enter overpayment here ▶ $ and check if to be: ☐ Applied to next return, or ☐ Refunded.

13 If you are not liable for returns in the future, write "FINAL RETURN" here . . . . ▶

Under penalties of perjury, I declare that I have examined this return, including accompanying schedules and statements, and to the best of my knowledge and belief it is true, correct, and complete.

Date ▶ Signature ▶ Title (Owner, etc.) ▶

Please file this form with your Internal Revenue Service Center (see instructions on "Where to File").

Form **943** (1980)

ASSIGNMENT SHEET #2

General Instructions

Note: *The deposit requirements for social security (FICA) taxes and withheld income tax are scheduled to change for 1981. The new rules are explained on page 4.*

For 1980, FICA taxes apply only to the first $25,900 of taxable wages you pay to each employee. For 1981, the FICA maximum is scheduled to increase to $29,700.

FICA tax rates for 1981 are scheduled to increase to 6.65% each for the employee and the employer.

Under Public Law 95–600, employees who qualify can choose to receive advance earned income credit (EIC) payments with their wages. Employees who are eligible can make this election by giving you a completed **Form W–5, Earned Income Credit Advance Payment Certificate,** *annually. Make the payments from FICA taxes (and withheld income taxes) that would otherwise be paid to IRS.* **Circular E (Supplement), Employer's Tax Guide, dated July 1979,** *has tables and instructions for figuring advance EIC payments. The supplement is available at IRS offices. Reduce your employment tax liabilities by amounts paid out as advance EIC payments, but do not show the payments in the Record of Federal Tax Deposits as explained in Circular E (Supplement). The supplement was printed before regulations for advance EIC payments were developed.*

Who Are Agricultural Workers.—For a definition of agricultural workers ("farmworkers"), see Circular A.

Where to Get Information.—The instructions on this page give general information about filing this form. Following this are specific line-by-line instructions on how to fill in this form and information on the new deposit requirements effective January 1, 1981.

For more details, see Circular A, Agricultural Employer's Tax Guide. Circular E, Employer's Tax Guide, covers withholding of income tax and other related subjects. You can get these circulars at IRS offices.

Purpose of Form 943.—Use this form to report employer and employee FICA taxes on farmworkers. Also use this form to report taxes on wages of household employees in a private home on a farm operated for profit. They are considered farm employees.

You can withhold income tax from an employee's wages if you and the employee agree to this arrangement. Use this form to report any withheld income tax.

If you paid taxable wages to an employee for services other than farmwork, do not include them on Form 943. Instead, use Form 941, Employer's Quarterly Federal Tax Return. If you paid wages for domestic service in your private, nonfarm home, use Form 942, Employer's Quarterly Tax Return for Household Employees. FICA taxes apply only to the first $25,900 of taxable wages you paid to each employee in 1980, regardless of the kinds of work done. You can get forms and instructions at IRS offices.

Who Must File.—File Form 943 if you paid cash wages to one or more farmworkers to whom FICA taxes apply. Also file Form 943 if you have one or more farmworkers who asked to have income tax withheld from pay for farmwork.

How to Determine if FICA Taxes Are Due. The $150 or 20 Days a Year Tests.—Employer and employee taxes under the Federal Insurance Contributions Act (FICA) are due on each employee:

- To whom you pay $150 or more cash wages in a calendar year for farmwork.

Or,

- Who does farmwork for you on 20 or more days in a calendar year for any amount of cash wages figured on a time basis.

Withholding of Income Tax.—If an employee asks you to withhold income tax and you agree, you must withhold the correct tax from all pay to the employee, both cash and noncash. Show total income tax withheld on line 6, page 1.

An employee who wants Federal income tax withheld from wages must give you a completed Form W–4, Employee's Withholding Allowance Certificate.

See Circular E, Employer's Tax Guide, for Federal income tax withholding tables. You can get Form W–4 and Circular E at IRS offices.

FUTA Tax.—The Federal Unemployment Tax Act (FUTA) has been expanded to cover certain employees doing farmwork. In general, you must file the 1980 Form 940, Employer's Annual Federal Unemployment Tax Return, by January 31, 1981, if either of the following applies:

- You paid cash wages of $20,000 or more to farmworkers in any calendar quarter in 1979 or 1980.

Or,

- You employed 10 or more farmworkers during some part of a day for at least one day in 20 different weeks in 1979 or 1980.

Count as farmworkers any aliens legally admitted to the United States on a temporary basis to do farmwork in 1980 (after 1980, in the current or preceding year) to determine if you meet either of the above tests. However, wages paid to these aliens are not subject to FUTA tax until 1982.

For more information, see Circular A and the instructions for Form 940.

When to File Form 943.—For 1980, file Form 943 by January 31, 1981. However, if you made deposits on time in full payment of the taxes due for the year, you may file the return by February 10, 1981.

If the due date for filing a return or making a tax deposit falls on Saturday, Sunday, or a legal holiday, you may file the return or make the deposit on the first day afterward that is not a Saturday, Sunday, or legal holiday.

After you file your first return, we will send you a form every year. If you don't have a form, get one from an IRS office in time to file the return when due.

If you receive a form for a year in which you are not liable for filing, write NONE on line 9 and send the form back to the Internal Revenue Service. If you stop paying wages during the year, file a final return for 1980. Be sure to fill in line 13. If you later become liable for any of the taxes, notify IRS.

Where to File.—

If your legal residence, principal place of business, office, or agency is in ▼	File with the Internal Revenue Service Center at ▼	
New Jersey, New York City and counties of Nassau, Rockland, Suffolk, and Westchester	Holtsville, NY	00501
New York (all other counties), Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont	Andover, MA	05501
District of Columbia, Delaware, Maryland, Pennsylvania	Philadelphia, PA	19255
Alabama, Florida, Georgia, Mississippi, South Carolina	Atlanta, GA	31101
Michigan, Ohio	Cincinnati, OH	45999
Arkansas, Kansas, Louisiana, New Mexico, Oklahoma, Texas	Austin, TX	73301
Alaska, Arizona, Colorado, Idaho, Minnesota, Montana, Nebraska, Nevada, North Dakota, Oregon, South Dakota, Utah, Washington, Wyoming	Ogden, UT	84201
Illinois, Iowa, Missouri, Wisconsin	Kansas City, MO	64999
California, Hawaii	Fresno, CA	93888
Indiana, Kentucky, North Carolina, Tennessee, Virginia, West Virginia	Memphis, TN	37501
If you have no legal residence or principal place of business in any State	Philadelphia, PA	19255

Forms W–2 and W–3.—You must give a Form W–2 to every employee to whom you paid any amount for services, in cash or otherwise, if you are in a trade or business.

By January 31, 1981, give Form W–2 to each employee who was working for you at the end of 1980. If an employee stops working for you before the end of the year, give him or her Form W–2 any time after employment ends but no later than January 31 of the following year. However, if the employee asks you for Form W–2, give him or her the completed form within 30 days of the request or the last wage payment, whichever is later.

By February 28, 1981, send Copy A of all Forms W–2 issued for 1980 to the Social Security Administration. Send them with Form W–3, Transmittal of Income and Tax Statements, to the SSA office for your State. The SSA addresses are in the instructions for Form W–3.

We will send you a Form W–3 during the fourth quarter. If you don't receive it, get Form W–3 from an IRS office.

For details, see the instructions for the forms.

Filing on Magnetic Media.—You may use magnetic media instead of filing Copy A of Form W–2. You can get the rules for reporting W–2 information on magnetic media from the Magnetic Media Coordinator at any Internal Revenue Service Center, or from the Social Security Administration, Office of Operational Policy and Procedures, P.O. Box 2317, Baltimore, MD 21203.

INCOME TAX FORMS
UNIT I

ASSIGNMENT SHEET #3--COMPUTE SOCIAL SECURITY SELF-EMPLOYMENT TAX

NAME____ SCORE__________________

Schedule SE provides the Social Security Administration with the necessary information on your income needed for computing your Social Security benefits.

In computing your tax, exclude any item of income or expense that is not included in the computation of net earnings from farming.

(NOTE: If you farmed and had one or more other trades or businesses, your net earnings from self-employment are the combined net earnings from farming and all other trades or businesses. If you are involved in a partnership, you should include your entire share of earnings from the partnership. No share can be allocated to your spouse, even though the income may be, under state law, community income.)

Net farm profit is determined from Schedule F, Form 1040, in Line 58 and is $14,781.20. Compute Schedule SE, Form 1040, Social Security Self-employment tax on the form provided, based on the previously given Schedule F, net profit.

ASSIGNMENT SHEET #3

SCHEDULE SE
(Form 1040)
Department of the Treasury
Internal Revenue Service

Computation of Social Security Self-Employment Tax

▶ See Instructions for Schedule SE (Form 1040).
▶ Attach to Form 1040.

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1980
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Name of self-employed person (as shown on social security card)	Social security number of self-employed person ▶

Part I Computation of Net Earnings from FARM Self-Employment

Regular Method			
1 Net profit or (loss) from:			
a Schedule F (Form 1040)	1a		
b Farm partnerships	1b		
2 Net earnings from farm self-employment (add lines 1a and 1b)	2		
Farm Optional Method			
3 If gross profits from farming are: a Not more than $2,400, enter two-thirds of the gross profits b More than $2,400 and the net farm profit is less than $1,600, enter $1,600	3		
4 Enter here and on line 12a, the amount on line 2, or line 3 if you elect the farm optional method	4		

Part II Computation of Net Earnings from NONFARM Self-Employment

SE

Regular Method			
5 Net profit or (loss) from:			
a Schedule C (Form 1040)	5a		
b Partnerships, joint ventures, etc. (other than farming)	5b		
c Service as a minister, member of a religious order, or a Christian Science practitioner. (Include rental value of parsonage or rental allowance furnished.) If you filed Form 4361 and have not revoked that exemption, check here ▶ ☐ and enter zero on this line	5c		
d Service with a foreign government or international organization	5d		
e Other (specify) ▶	5e		
6 Total (add lines 5a through 5e)	6		
7 Enter adjustments if any (attach statement, see page 29 of Instructions)	7		
8 Adjusted net earnings or (loss) from nonfarm self-employment (line 6, as adjusted by line 7)	8		
Note: *If line 8 is $1,600 or more or if you do not elect to use the Nonfarm Optional Method, skip lines 9 through 11 and enter amount from line 8 on line 12b.*			
Nonfarm Optional Method			
9 a Maximum amount reportable under both optional methods combined (farm and nonfarm)	9a	$1,600	00
b Enter amount from line 3. (If you did not elect to use the farm optional method, enter zero.)	9b		
c Balance (subtract line 9b from line 9a)	9c		
10 Enter two-thirds of gross nonfarm profits or $1,600, whichever is smaller	10		
11 Enter here and on line 12b, the amount on line 9c or line 10, whichever is smaller	11		

Part III Computation of Social Security Self-Employment Tax

12 Net earnings or (loss):			
a From farming (from line 4)	12a		
b From nonfarm (from line 8, or line 11 if you elect to use the Nonfarm Optional Method)	12b		
13 Total net earnings or (loss) from self-employment reported on lines 12a and 12b. (If line 13 is less than $400, you are not subject to self-employment tax. Do not fill in rest of schedule)	13		
14 The largest amount of combined wages and self-employment earnings subject to social security or railroad retirement taxes for 1980 is	14	$25,900	00
15 a Total "FICA" wages (from Forms W–2) and "RRTA" compensation — 15a			
b Unreported tips subject to FICA tax from Form 4137, line 9 or to RRTA — 15b			
c Add lines 15a and 15b	15c		
16 Balance (subtract line 15c from line 14)	16		
17 Self-employment income—line 13 or 16, whichever is smaller	17		
18 Self-employment tax. (If line 17 is $25,900, enter $2,097.90; if less, multiply the amount on line 17 by .081.) Enter here and on Form 1040, line 48	18		

INCOME TAX FORMS
UNIT I

ASSIGNMENT SHEET #4--COMPUTE INVESTMENT TAX CREDIT ON FORM 3468

NAME______________________________ SCORE____________

One of the steps in preparing a farm income tax return is to figure the investment credit.

Use the information below to complete Form 3468, Computation of Investment Credit, for your farm.

1. You know dairy cattle are eligible for investment credit, but you also know that you must follow special rules to determine the cost of livestock for that credit.
    a. On June 1, you bought a used bull for $800.00 having an estimated useful life of four years.
    b. On January 6, you bought a replacement dairy cow for $500.00 with an estimated useful life of five years.
    c. No substantially identical livestock have been disposed of.
2. On April 6, you bought and placed in service a new combine for your farm. The combine cost $48,210.00 and has an estimated useful life of 10 years. You also traded in your old tractor for a new one which has a useful life of 10 years. The basis for figuring the investment credit on the new tractor was $35,000.00.
3. You are filing a joint return with your spouse and your tax liability from Form 1040 is line 37, page 2, and is $1,256.00.

ASSIGNMENT SHEET #4

(235)

Form **3468**
Department of the Treasury
Internal Revenue Service

Computation of Investment Credit

▶ Attach to your tax return.

1980
28

Name

Identifying number as shown on page 1 of your tax return

Check the box(es) below that apply to you:

A The corporation elects the basic or basic and matching employee plan percentage under section 48(n)(1) . . . . ☐

B I elect to increase my qualified investment to 100% for certain commuter highway vehicles under section 46(c)(6) . . . . . . ☐

C I elect to increase my qualified investment by all qualified progress expenditures made this tax year and all later years . . . ☐

D I claim full credit on certain ships under section 46(g)(3). (See the General Instructions for details.) . . . . ☐

1 Use the format below to list your qualified investment in new or used property acquired or constructed and placed in service during the tax year. Also list qualified progress expenditures made during the tax year and qualified rehabilitation expenditures for the year. See the instructions for lines 1(a) through 1(i).

Note: *Include your share of investment in property made by a partnership, estate, trust, small business corporation, or lessor.*

Type of property	Line	(1) Life years	(2) Cost or basis	(3) Applicable percentage	(4) Qualified investment (Column 2 x column 3)
New property	(a)	3 or more but less than 5		33⅓	
	(b)	5 or more but less than 7		66⅔	
	(c)	7 or more		100	
New commuter highway vehicle	(d)	3 or more		100	
Qualified progress expenditures	(e)	7 or more		100	
Used property (See instructions for dollar limits)	(f)	3 or more but less than 5		33⅓	
	(g)	5 or more but less than 7		66⅔	
	(h)	7 or more		100	
Used commuter highway vehicle	(i)	3 or more		100	

2 Qualified investment—Add lines 1(a) through (i) (see General Instructions for special limits) . . . .

3 10% of line 2 (see instruction for line 3 for special limits) . . . .

4 Corporations electing the basic or basic and matching employee plan percentage for contributions to tax credit employee stock ownership plans—Check election box A above (see instruction or line 4).

(a) Basic 1% credit—Enter 1% of line 2 . . . .

(b) Matching credit (not more than 0.5%)—Enter allowable percentage times adjusted line 2 (attach schedule) . . .

5 Regular investment credit from cooperative . . . .

6 Total—Add lines 3 through 5 . . . .

7 Carryover of unused credit(s) . . . .

8 Carryback of unused credit(s) . . . .

9 Tentative regular investment credit—Add lines 6, 7, and 8 . . . .

Tax Liability Limitations

10 (a) Individuals—Enter amount from Form 1040, line 37, page 2 . . . . . .
(b) Estates and trusts—Enter amount from Form 1041, line 26, page 1 . . . .
(c) Corporations—Enter amount from Schedule J (Form 1120), line 3, page 3 . .
(d) Others—Enter tax before credits from your return . . . . } . . . . . .

11 (a) Credit for the elderly (individuals only) . . . .
(b) Foreign tax credit . . . .
(c) Tax on lump-sum distribution from Form 4972 or Form 5544 . . . . . .
(d) Possessions corporation tax credit (corporations only) . . . .
(e) Section 72(m)(5) penalty tax (individuals only) . . . .

12 Total—Add lines 11(a) through (e) . . . .

13 Subtract line 12 from line 10 . . . .

14 (a) Enter smaller of line 13 or $25,000. See instruction for line 14 . . . .
(b) If line 13 is more than line 14(a) and you are a 1980 calendar year taxpayer, enter 70% of the excess (if your tax year ends in 1981, enter 80% of the excess). (Railroads, and airlines see instruction for line 14.) . . . .

15 Regular investment credit limitation—Add lines 14(a) and (b) . . . .

16 Allowed regular investment credit—Enter the smaller of line 9 or line 15 . . . .

17 Business energy investment credit limitation—subtract line 16 from line 13 . . . .

18 Business energy investment credit (from line 11, Schedule B on page 2) . . . .

19 Allowed business energy investment credit—Enter smaller of line 17 or line 18 . . . .

20 Total allowed regular and business energy investment credit—Add lines 16 and 19. Enter here and on Form 1040, line 41; Schedule J (Form 1120), line 4(b), page 3; or the proper line on other returns . . . .

Form **3468** (1980)

ASSIGNMENT SHEET #4

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Form 3468 (1980) Page 2

Schedule A If any part of your investment in line 1, page 1, or Schedule B below was made by a partnership, estate, trust, small business corporation, or lessor, complete the following schedule and identify property qualifying for the regular or energy investment credit.

Name (Partnership, estate, trust, etc.)	Address	Property			
		Progress expenditures	New	Used	Life years
		$	$	$	

Schedule B **Business Energy Investment Credit (See Instructions for line 18.)**

List your qualified investment in new energy property acquired or constructed and placed in service during the tax year. Also list qualified progress expenditures made during the tax year.

Type of Property	(1) Life years	(2) Cost or basis	(3) Applicable percentage	(4) Qualified investment (Column 2 x column 3)
1 (a) Alternative energy property	3 or more but less than 5		33⅓	
	5 or more but less than 7		66⅔	
	7 or more		100	
(b) Specially defined energy property	3 or more but less than 5		33⅓	
	5 or more but less than 7		66⅔	
	7 or more		100	
(c) Recycling equipment	3 or more but less than 5		33⅓	
	5 or more but less than 7		66⅔	
	7 or more		100	
(d) Shale oil equipment	3 or more but less than 5		33⅓	
	5 or more but less than 7		66⅔	
	7 or more		100	
(e) Equipment for producing natural gas from geopressured brine	3 or more but less than 5		33⅓	
	5 or more but less than 7		66⅔	
	7 or more		100	
(f) Cogeneration equipment	3 or more but less than 5		33⅓	
	5 or more but less than 7		66⅔	
	7 or more		100	
(g) Qualified intercity buses	3 or more but less than 5		33⅓	
	5 or more but less than 7		66⅔	
	7 or more		100	
(h) Total 10% energy investment property (add lines 1(a) through (g))			▨	
2 (a) Qualified hydroelectric generating equipment Nameplate KWH ▶	3 or more but less than 5		33⅓	
	5 or more but less than 7		66⅔	
	7 or more		100	
(b) Total 11% energy investment property (add line 2(a))			▨	
3 (a) Solar and wind equipment	3 or more but less than 5		33⅓	
	5 or more but less than 7		66⅔	
	7 or more		100	
(b) Ocean thermal equipment	3 or more but less than 5		33⅓	
	5 or more but less than 7		66⅔	
	7 or more		100	
(c) Geothermal equipment	3 or more but less than 5		33⅓	
	5 or more but less than 7		66⅔	
	7 or more		100	
(d) Total 15% energy investment property (add lines 3(a) through 3(c))			▨	

4 Enter 10% of line 1(h) column (4) . . . .

5 Enter 11% of line 2(b) column (4) . . . .

6 Enter 15% of line 3(d) column (4) . . . .

7 Business energy investment credit from cooperative . . . .

8 Current year business energy investment credit—Add lines 4 through 7 . . . .

9 Carryover of unused credit(s) . . . .

10 Carryback of unused credit(s) . . . .

11 Tentative business energy investment credit—Add lines 8 through 10. Enter here and on line 18 on page 1 . . . .

INCOME TAX FORMS
UNIT I

ASSIGNMENT SHEET #5--DETERMINE CAPITAL GAINS AND LOSSES ON FORM 4797 AND SCHEDULE D

NAME______________________________ SCORE________________

Gains and losses from the sale, exchange, or involuntary conversion of assets used in a trade or business are reported on Form 4797.

Capital gains and losses are reported on Schedule D.

(NOTE: Property to be reported on this Schedule are gains and losses on stocks, bonds, and similar investments and gains on personal assets such as a home or jewelry. Losses on personal assets are not reported on this schedule.)

PART I:

Use the following information to complete Form 4797, Parts I, II, and II, for Jerry Brown's Dairy Farm.

(NOTE: Jerry Brown's Dairy Farm identifying number is 000-00-0008.)

A. Sold five raised diary cows January 9, 1981, @ $525.00 each. There were no sale expenses. The cows entered the dairy herd during 1977.

B. Sold dairy cow #21 April 13, 1981, @ $446.00. There was no sale expense. Cow #21 was purchased January 6, 1981, at a cost of $800.00 and no depreciation has been taken.

C. Sold J.D. tractor January 7, 1981, for $11,500.00. There was no sale expense. The tractor was purchased June 25, 1972, for $10,250.00 and $10,250.00 in depreciation has been taken.

D. Sold mower February 19, 1981, for $150.00. There was no sale expense. The mower was purchased April 16, 1973, for $290.00 and $290.00 in depreciation has been taken.

E. On October 23, 1981, dairy cow #41 was sold for $516.00 and expenses for the sale were $14.00. Cow #41 was purchased February 17, 1975, at a cost of $395.00 and $95.00 in depreciation has been taken.

F. On October 1, 1981, dairy cow #52 was sold for $699.00 and expenses for the sale were $14.00. Cow #52 was purchased May 11, 1978, for $850.00 and $214.00 in depreciation has been taken.

G. There were no gains or losses to report from Form 4684 for involuntary conversions from casualty and theft.

ASSIGNMENT SHEET #5

PART II:

Use the figures computed on Form 4797 and the following additional information for Jerry Brown's Dairy Farm to complete Schedule D, Parts I, II, and III, to determine capital gains or losses.

A. Sold 25 shares of H.T. Corporation on March 5, 1981, for $430.00. There were sale expenses of $50.00. The 25 shares were purchased December 1, 1980, for $430.00.

B. Sold 40 shares of H.T. Corporation on July 1, 1981, for $1,050.00. There were sale expenses of $50.00. The 40 shares were purchased February 1, 1967, for $225.00.

C. There were no other gains or losses or capital loss carryovers from previous years.

ASSIGNMENT SHEET #5

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Form **4797**
Department of the Treasury
Internal Revenue Service

Supplemental Schedule of Gains and Losses

(Includes Gains and Losses From Sales or Exchanges of Assets Used in a Trade or Business and Involuntary Conversions)
To be filed with Form 1040, 1041, 1065, 1120, etc.—See Separate Instructions

1980

Name(s) as shown on return	Identifying number as shown on page 1 of your tax return

Part I **Sales or Exchanges of Property Used in a Trade or Business, and Involuntary Conversions From Other Than Casualty and Theft—Property Held More Than 1 Year (Except for Certain Livestock)**

Note: *Use Form 4684 to report involuntary conversions from casualty and theft.*
Caution: *If you sold property on which you claimed the investment credit, you may be liable for recapture of that credit. See Form 4255 for additional information.*

a. Kind of property (if necessary, attach additional descriptive details not shown below)	b. Date acquired (mo., day, yr.)	c. Date sold (mo., day, yr.)	d. Gross sales price minus expense of sale	e. Depreciation allowed (or allowable) since acquisition	f. Cost or other basis, plus improvements	g. LOSS (f minus d plus e)	h. GAIN (d plus e minus f)
1							

2 Gain, if any, from Form 4684, Part II, line 25 . . . .
3 Gain, if any, from line 26, Part III, on back of this form attributable to other than casualty and theft . . . .
4 Add lines 1 through 3 in column g and column h . . . .
5 Combine line 4, column g and line 4, column h. Enter here, and on the appropriate line as follows:
  (a) For all except partnership returns:
    (1) If line 5 is a gain, enter the gain as a long-term capital gain on Schedule D (Form 1040, 1120, etc.) that is being filed. See instruction E.
    (2) If line 5 is zero or a loss, enter that amount on line 6.
  (b) For partnership returns: Enter the amount shown on line 5 above, on Schedule K (Form 1065), line 8.

Part II **Ordinary Gains and Losses**

a. Kind of property (if necessary, attach additional descriptive details not shown below)	b. Date acquired (mo., day, yr.)	c. Date sold (mo., day, yr.)	d. Gross sales price minus expense of sale	e. Depreciation allowed (or allowable) since acquisition	f. Cost or other basis, plus improvements	g. LOSS (f minus d plus e)	h. GAIN (d plus e minus f)
6 Loss, if any, from line 5(a)(2)							
7 Gain, if any, from line 25, Part III on back of this form							
8 Net gain or (loss) from Form 4684, lines 17 and 24a							
9 Other ordinary gains and losses (include property held 1 year or less):							
10 Add lines 6 through 9 in column g and column h							

11 Combine line 10, column g and line 10, column h. Enter here, and on the appropriate line as follows:
  (a) For all except individual returns: Enter the gain or (loss) shown on line 11, on the line provided for on the return (Form 1120, etc.) being filed. See instruction F for specific line reference.
  (b) For individual returns:
    (1) If the loss on line 6 includes a loss from Form 4684, Part II, column B(ii), enter that part of the loss here and on line 29 of Schedule A (Form 1040). Identify as from "Form 4797, line 11(b)(1)" . . . .
    (2) Redetermine the gain or (loss) on line 11, excluding the loss (if any) entered on line 11(b)(1). Enter here and on Form 1040, line 16 . . . .

Part III **Gain From Disposition of Property Under Sections 1245, 1250, 1251, 1252, 1254, 1255**

Skip lines 20 and 21 if there are no dispositions of farm property or farmland, or if this form is filed by a partnership.

12 Description of sections 1245, 1250, 1251, 1252, 1254, and 1255 property:	Date acquired (mo., day, yr.)	Date sold (mo., day, yr.)
(A)		
(B)		
(C)		
(D)		

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Form 4797 (1980) Page 2

Relate lines 12(A) through 12(D) to these columns ▶ ▶ ▶	Property (A)	Property (B)	Property (C)	Property (D)
13 Gross sales price minus expense of sale				
14 Cost or other basis				
15 Depreciation (or depletion) allowed (or allowable)				
16 Adjusted basis, subtract line 15 from line 14				
17 Total gain, subtract line 16 from line 13				
18 If section 1245 property:				
(a) Depreciation allowed (or allowable) after applicable date (see instructions)				
(b) Enter smaller of line 17 or 18(a)				
19 If section 1250 property:				
(a) Additional depreciation after 12/31/75 (see instructions)				
(b) Applicable percentage times the smaller of line 17 or line 19(a) (see instruction G.4)				
(c) Subtract line 19(a) from line 17. (If line 17 is not more than line 19(a), skip lines 19(d) through 19(h). Enter the amount from line 19(b) on line 19(i).)				
(d) Additional depreciation after 12/31/69 and before 1/1/76				
(e) Applicable percentage times the smaller of line 19(c) or 19(d) (see instruction G.4)				
(f) Subtract line 19(d) from line 19(c). (If line 19(c) is not more than line 19(d), skip lines 19(g) and 19(h). Combine the amounts on lines 19(b) and 19(e) on line 19(i).)				
(g) Additional depreciation after 12/31/63 and before 1/1/70				
(h) Applicable percentage times the smaller of line 19(f) or 19(g) (see instruction G.4)				
(i) Add lines 19(b), 19(e), and 19(h)				
20 If section 1251 property.				
(a) If farmland, enter soil, water, and land clearing expenses for current year and the four preceding years				
(b) If farm property other than land, subtract line 18(b) from line 17; if farmland, enter smaller of line 17 or 20(a) (see instruction G.5)				
(c) Excess deductions account (see instruction G.5)				
(d) Enter smaller of line 20(b) or 20(c)				
21 If section 1252 property:				
(a) Soil, water, and land clearing expenses made after 12/31/69				
(b) Amount from line 20(d), if none enter a zero				
(c) Subtract line 21(b) from line 21(a). (If line 21(b) is more than line 21(a), enter zero.)				
(d) Line 21(c) times applicable percentage (see instruction G.5)				
(e) Subtract line 21(b) from line 17				
(f) Enter smaller of line 21(d) or 21(e)				
22 If section 1254 property:				
(a) Intangible drilling and development costs deducted after 12/31/75 (see instruction G.6)				
(b) Enter smaller of line 17 or 22(a)				
23 If section 1255 property:				
(a) Applicable percentage of payments excluded from income under section 126 (see instruction G.7)				
(b) Enter the smaller of line 17 or 23(a)				

Summary of Part III Gains (Complete Property columns (A) through (D) through line 23(b) before going to line 24)

24 Total gains for all properties (add columns (A) through (D), line 17)	
25 Add columns (A) through (D), lines 18(b), 19(i), 20(d), 21(f), 22(b) and 23(b). Enter here and on Part II, line 7	
26 Subtract line 25 from line 24. Enter the portion attributable to casualty and theft on Form 4684, line 19; enter the portion attributable to other than casualty and theft on Form 4797, Part I, line 3	

ASSIGNMENT SHEET #5

SCHEDULE D
(Form 1040)
Department of the Treasury
Internal Revenue Service

Capital Gains and Losses

(Examples of property to be reported on this Schedule are gains and losses on stocks, bonds, and similar investments, and gains (but not losses) on personal assets such as a home or jewelry.)

▶ Attach to Form 1040. ▶ See Instructions for Schedule D (Form 1040).

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Name(s) as shown on Form 1040

Your social security number

Part I Short-term Capital Gains and Losses—Assets Held One Year or Less

D

a. Kind of property and description (Example, 100 shares 7% preferred of "Z" Co.)	b. Date acquired (Mo., day, yr.)	c. Date sold (Mo., day, yr.)	d. Gross sales price less expense of sale	e. Cost or other basis, as adjusted (see instructions page 21)	f. LOSS if column (e) is more than (d) subtract (d) from (e)	g. GAIN if column (d) is more than (e) subtract (e) from (d)
1						

2 Gain from sale or exchange of a principal residence held one year or less, from Form 2119, lines 7 or 11 2

3 Enter your share of net short-term gain or (loss) from partnerships and fiduciaries 3

4 Add lines 1, 2 and 3 in column f and column g 4

5 Combine line 4, column f and line 4, column g and enter the net gain or (loss) 5

6 Short-term capital loss carryover from years beginning after 1969 . . . . 6 ( )

7 Net short-term gain or (loss), combine lines 5 and 6 7

Part II Long-term Capital Gains and Losses—Assets Held More Than One Year

8						

9 Gain from sale or exchange of a principal residence held more than one year, from Form 2119, lines 7, 11, or 18 9

10 Enter your share of net long-term gain or (loss) from partnerships and fiduciaries 10

11 Add lines 8, 9 and 10 in column f and column g 11

12 Combine line 11, column f and line 11, column g and enter the net gain or (loss) 12

13 Capital gain distributions 13

14 Enter gain, if applicable, from Form 4797, line 5(a)(1) 14

15 Enter your share of net long-term gain from small business corporations (Subchapter S) 15

16 Combine lines 12 through 15 16

17 Long-term capital loss carryover from years beginning after 1969 . . . . 17 ( )

18 Net long-term gain or (loss), combine lines 16 and 17 18

Note: *If you have capital loss carryovers from years beginning before 1970, do not complete rest of form.* **See Form 4798 instead.** *Otherwise, complete this form on reverse.*

ASSIGNMENT SHEET #5

⑧②
Schedule D (Form 1040) 1980 — Page 2

Part III Summary of Parts I and II

19 Combine lines 7 and 18, and enter the net gain or (loss) here . . . . 19 ______

20 If line 19 shows a gain—

a Enter 60% of line 18 or 60% of line 19, whichever is smaller. Enter zero if there is a loss or no entry on line 18 . . . . 20a ______

If the amount you enter on this line is other than zero, you may be liable for the alternative minimum tax. See Form 6251.

b Subtract line 20a from line 19. Enter here and on Form 1040, line 14 . . . . 20b ______

21 If line 19 shows a loss—

a Enter one of the following amounts:
(i) If line 7 is zero or a net gain, enter 50% of line 19,
(ii) If line 18 is zero or a net gain, enter line 19; or,
(iii) If line 7 and line 18 are net losses, enter amount on line 7 added to 50% of the amount on line 18 . . . . 21a ______

b Enter here and enter as a loss on Form 1040, line 14, the smallest of:
(i) The amount on line 21a,
(ii) $3,000 ($1,500 if married and filing a separate return); or,
(iii) Taxable income, as adjusted . . . . 21b ______

Note: *If the loss on line 21a is more than the loss shown on line 21b, complete Part IV to determine post-1969 capital loss carryover from 1980 to 1981.*

Part IV Computation of Post-1969 Capital Loss Carryovers from 1980 to 1981

(Complete this part if the loss on line 21a is more than the loss shown on line 21b)

Section A.—Short-term Capital Loss Carryover

22 Enter loss shown on line 7; if none, enter zero and skip lines 23 through 27—then go to line 28 . . . 22 ______

23 Enter gain shown on line 18. If that line is blank or shows a loss, enter zero . . . . 23 ______

24 Reduce any loss on line 22 to the extent of any gain on line 23 . . . . 24 ______

25 Enter amount shown on line 21b . . . . 25 ______

26 Enter smaller of line 24 or 25 . . . . 26 ______

27 Subtract line 26 from line 24 . . . . 27 ______

Note: *The amount on line 27 is the part of your short-term capital loss carryover from 1980 to 1981 that is from years beginning after 1969.*

Section B.—Long-term Capital Loss Carryover

28 Subtract line 26 from line 25. (**Note:** *if you skipped lines 23 through 27, enter amount from line 21b*) . 28 ______

29 Enter loss from line 18; if none, enter zero and skip lines 30 through 33 . . . . 29 ______

30 Enter gain shown on line 7. If that line is blank or shows a loss, enter zero . . . . 30 ______

31 Reduce any loss on line 29 to the extent of any gain on line 30 . . . . 31 ______

32 Multiply amount on line 28 by 2 . . . . 32 ______

33 Subtract line 32 from line 31 . . . . 33 ______

Note: *The amount on line 33 is the part of your long-term capital loss carryover from 1980 to 1981 that is from years beginning after 1969.*

INCOME TAX FORMS
UNIT I

ANSWERS TO ASSIGNMENT SHEETS

Assignment Sheet #1--See following pages

Answers to Assignment Sheet #1

SCHEDULE F
(Form 1040)
Department of the Treasury
Internal Revenue Service

Farm Income and Expenses

▶ Attach to Form 1040, Form 1041, or Form 1065.
▶ See Instructions for Schedule F (Form 1040).

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17

Name of proprietor(s)
Social security number
Farm name and address ▶
Employer identification number

Part I Farm Income—Cash Method

Do not include sales of livestock held for draft, breeding, sport, or dairy purposes; report these sales on Form 4797.

Sales of Livestock and Other Items You Bought for Resale

a. Description	b. Amount		c. Cost or other basis	
1 Livestock ▶ Cattle	28,000	00	22,500	00
2 Other items ▶				
3 Totals	28,000	00	22,500	00
4 Profit or (loss), subtract line 3, column c, from line 3, column b ▶			5,500	00

Sales of Livestock and Produce You Raised and Other Farm Income

Kind		Amount	
5 Cattle		6,720	00
6 Calves		53,426	00
7 Sheep		2,160	00
8 Swine		700	00
9 Poultry			
10 Dairy products			
11 Eggs		109	20
12 Wool			
13 Cotton			
14 Tobacco			
15 Vegetables		300	00
16 Soybeans			
17 Corn			
18 Other grains			
19 Hay		10,000	00
20 Straw			
21 Fruits and nuts			
22 Machine work		15,000	00
23 a Patronage dividends			
b Less: Nonincome items			
c Net patronage dividends			
24 Per-unit retains			
25 Nonpatronage distributions from exempt cooperatives			
26 Agricultural program payments: a Cash			
b Materials and services			
27 Commodity credit loans under election (or forfeited)			
28 Federal gasoline tax credit		54	00
29 State gasoline tax refund			
30 Other (specify) ▶			
31 Add amounts in column for lines 5 through 30		88,468	20
32 Gross profits* (add lines 4 and 31) ▶		93,968	20

Part II Farm Deductions—Cash and Accrual Method

F

Do not include personal or living expenses (such as taxes, insurance, repairs, etc., on your home), which do not produce farm income. Reduce the amount of your farm deductions by any reimbursement before entering the deduction below.

Items		Amount	
33 a Labor hired		4,000	00
b Jobs credit			
c WIN credit			
d Total credits		0	00
e Balance (subtract line 33d from line 33a)		4,000	00
34 Repairs, maintenance		10,489	00
35 Interest		13,125	00
36 Rent of farm, pasture		1,500	00
37 Feed purchased		20,649	00
38 Seeds, plants purchased		30	00
39 Fertilizers, lime, chemicals		239	00
40 Machine hire		600	00
41 Supplies purchased		9,400	00
42 Breeding fees			
43 Veterinary fees, medicine		350	00
44 Gasoline, fuel, oil		4,000	00
45 Storage, warehousing			
46 Taxes		600	00
47 Insurance		800	00
48 Utilities		1,200	00
49 Freight, trucking		800	00
50 Conservation expenses			
51 Land clearing expenses			
52 Pension and profit-sharing plans			
53 Employee benefit programs other than line 52			
54 Other (specify) ▶			
Farm Magazines		65	00
Farm Business Mgmt class		60	00
Office + Record Supplies		80	00
55 Add lines 33e through 54		67,987	00
56 Depreciation (from Part III, line 62)		11,200	00
57 Total deductions (add lines 55 and 56) ▶		79,187	00

58 Net farm profit or (loss) (subtract line 57 from line 32). If a profit, enter on Form 1040, line 19, and on Schedule SE, Part I, line 1a. If a loss, go on to line 59. (Fiduciaries and partnerships, see the Instructions.)	58	14,781	20

59 If you have a loss, do you have amounts for which you are not "at risk" in this farm (see Instructions)? ☐ Yes ☐ No

*Use amount on line 32 for optional method of computing net earnings from self-employment. (See Schedule SE, Part I, line 3.)

Answers to Assignment Sheet #1

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Schedule F (Form 1040) 1980 18 Page 2

Part III **Depreciation (Do not include your home, its furnishings, and other personal items.)** If you need more space, use Form 4562.

Description of property (a)	Date acquired (b)	Cost or other basis (c)	Depreciation allowed or allowable in prior years (d)	Method of computing depreciation (e)	Life or rate (f)	Depreciation for this year (g)	
60 Total additional first-year depreciation (do not include in items below) (see instructions for limitation) →							
61 Other depreciation:							
Farm Machinery & Equipment						6,200	00
Miscellaneous Equipment		(Depreciation schedule on file in				2,000	00
Breeding Livestock		farm records.)				3,000	00
62 Totals			Enter here and in Part II, line 56 ▶			11,200	00

Part IV **Farm Income—Accrual Method (Do not include sales of livestock held for draft, breeding, sport, or dairy purposes; report these sales on Form 4797 and omit them from "Inventory at beginning of year" column.)**

a. Kind	b. Inventory at beginning of year	c. Cost of items purchased during year	d. Sales during year	e. Inventory at end of year
63 Cattle				
64 Calves				
65 Sheep				
66 Swine				
67 Poultry				
68 Dairy products				
69 Eggs				
70 Wool				
71 Cotton				
72 Tobacco				
73 Vegetables				
74 Grain				
75 Fruits and nuts				
76 Other (specify) ▶				
77 Totals (enter here and in Part V below)	(Enter on line 86)	(Enter on line 87)	(Enter on line 79)	(Enter on line 78)

Part V **Summary of Income and Deductions—Accrual Method**

78 Inventory of livestock, crops, and products at end of year (line 77, column e)		
79 Sales of livestock, crops, and products during year (line 77, column d)		
80 Agricultural program payments: a Cash		
b Materials and services		
81 Commodity credit loans under election (or forfeited)		
82 Federal gasoline tax credit		
83 State gasoline tax refund		
84 Other farm income (specify) ▶		
85 Add lines 78 through 84		
86 Inventory of livestock, crops, and products at beginning of year (line 77, column b)		
87 Cost of livestock and products purchased during year (line 77, column c)		
88 Total (add lines 86 and 87)		
89 Gross profits* (subtract line 88 from line 85)		
90 Total deductions from Part II, line 57 ▶		
91 Net farm profit or (loss) (subtract line 90 from line 89). If a profit, individuals enter on Form 1040, line 19, and on Schedule SE, Part I, line 1a. If a loss, go on to line 92. (Fiduciaries and partnerships, see the Instructions.)	91	

92 If you have a loss, do you have amounts for which you are not "at risk" in this farm (see Instructions)? ☐ Yes ☐ No

*Use amount on line 89 for optional method of computing net earnings from self-employment. (See Schedule SE, Part I, line 3.)

Assignment Sheet #2--See following pages

Answers to Assignment Sheet #2

Form **943**
Department of the Treasury
Internal Revenue Service

Employer's Annual Tax Return for Agricultural Employees

(For Social Security (FICA) Taxes and Withheld Income Tax)

1980

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FD
FP
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T

Your name, address, employer identification number, and calendar year of return. (If not correct, please change.)

Name (as distinguished from trade name)
Trade name, if any
Address and ZIP code

Calendar Year
1980
Employer identification number

If address is different from prior return, check here ▶ ☐

1 Number of agricultural employees employed in the pay period that includes March 12, 1980 ▶	2	
2 Taxable cash wages paid during the year	6,700	00
3 FICA taxes (multiply line 2 by 12.26%)	821	42
4 Adjustment of FICA taxes (attach statement—see instructions on page 4)	-0-	
5 FICA taxes as adjusted	821	42
6 Federal income tax withheld (see instructions on page 2)	-0-	
7 Total taxes (add lines 5 and 6)	821	42
8 Advance earned income credit (EIC) payments, if any (see Note on page 2)	-0-	
9 Net taxes (subtract line 8 from line 7)	821	42

Record of Federal Tax Deposits

(See instructions for new deposit rules effective 1/1/81 on page 4)

If your total taxes are $2,000 or more for any month in 1980, attach a statement showing the tax liability, date of deposit, and amount of deposit for each quarter-month.

Deposit period ending:	I. Tax liability for month	II. Date of deposit	III. Amount deposited
Overpayment from 1979			
A January 31	61.30		
B February 29	61.30		
C March 31	61.30		
D April 30	61.30	4-25	200.00
E May 31	61.30		
F June 30	104.21	6-27	200.00
G July 31	104.21		
H August 31	61.30		
I September 30	61.30	9-26	200.00
J October 31	61.30		
K November 30	61.30		
L December 31	61.30	12-29	200.00
M Total for year (add lines A through L)	821.42		800.00
N Final deposit for 1980. (Enter "0" if you included the final deposit made for the year in item M)			21.42

10 Total amount deposited for 1980 including final deposit and overpayment from 1979 (total of column III)	800	00
Note: *If undeposited taxes at the end of 1980 are $200 or more, deposit the full amount with an authorized financial institution or a Federal Reserve bank according to the instructions on the back of Federal Tax Deposit Form 511. Enter this deposit in the Record of Federal Tax Deposits and include it on line 10.*		
11 Undeposited taxes due (subtract line 10 from line 9—this should be less than $200). Pay to Internal Revenue Service ▶	21	42
12 If line 10 is more than line 9, enter overpayment here ▶ $ and check if to be: ☐ Applied to next return, or ☐ Refunded.		
13 If you are not liable for returns in the future, write "FINAL RETURN" here ▶	Final Return	

Under penalties of perjury, I declare that I have examined this return, including accompanying schedules and statements, and to the best of my knowledge and belief it is true, correct, and complete.

Date ▶ Signature ▶ Title (Owner, etc.) ▶

Please file this form with your Internal Revenue Service Center (see instructions on "Where to File"). Form **943** (1980)

Answers to Assignment Sheet #2

General Instructions

Note: *The deposit requirements for social security (FICA) taxes and withheld income tax are scheduled to change for 1981. The new rules are explained on page 4.*

For 1980, FICA taxes apply only to the first $25,900 of taxable wages you pay to each employee. For 1981, the FICA maximum is scheduled to increase to $29,700.

FICA tax rates for 1981 are scheduled to increase to 6.65% each for the employee and the employer.

Under Public Law 95–600, employees who qualify can choose to receive advance earned income credit (EIC) payments with their wages. Employees who are eligible can make this election by giving you a completed **Form W–5, Earned Income Credit Advance Payment Certificate,** *annually. Make the payments from FICA taxes (and withheld income taxes) that would otherwise be paid to IRS.* **Circular E (Supplement), Employer's Tax Guide, dated July 1979,** *has tables and instructions for figuring advance EIC payments. The supplement is available at IRS offices. Reduce your employment tax liabilities by amounts paid out as advance EIC payments, but do not show the payments in the Record of Federal Tax Deposits as explained in Circular E (Supplement). The supplement was printed before regulations for advance EIC payments were developed.*

Who Are Agricultural Workers.—For a definition of agricultural workers ("farmworkers"), see Circular A.

Where to Get Information.—The instructions on this page give general information about filing this form. Following this are specific line-by-line instructions on how to fill in this form and information on the new deposit requirements effective January 1, 1981.

For more details, see Circular A, Agricultural Employer's Tax Guide. Circular E, Employer's Tax Guide, covers withholding of income tax and other related subjects. You can get these circulars at IRS offices.

Purpose of Form 943.—Use this form to report employer and employee FICA taxes on farmworkers. Also use this form to report taxes on wages of household employees in a private home on a farm operated for profit. They are considered farm employees.

You can withhold income tax from an employee's wages if you and the employee agree to this arrangement. Use this form to report any withheld income tax.

If you paid taxable wages to an employee for services other than farmwork, do not include them on Form 943. Instead, use Form 941, Employer's Quarterly Federal Tax Return. If you paid wages for domestic service in your private, nonfarm home, use Form 942, Employer's Quarterly Tax Return for Household Employees. FICA taxes apply only to the first $25,900 of taxable wages you paid to each employee in 1980, regardless of the kinds of work done. You can get forms and instructions at IRS offices.

Who Must File.—File Form 943 if you paid cash wages to one or more farmworkers to whom FICA taxes apply. Also file Form 943 if you have one or more farmworkers who asked to have income tax withheld from pay for farmwork.

How to Determine if FICA Taxes Are Due. The $150 or 20 Days a Year Tests.—Employer and employee taxes under the Federal Insurance Contributions Act (FICA) are due on each employee:

- To whom you pay $150 or more cash wages in a calendar year for farmwork.

Or,

- Who does farmwork for you on 20 or more days in a calendar year for any amount of cash wages figured on a time basis.

Withholding of Income Tax.—If an employee asks you to withhold income tax and you agree, you must withhold the correct tax from all pay to the employee, both cash and noncash. Show total income tax withheld on line 6, page 1.

An employee who wants Federal income tax withheld from wages must give you a completed Form W–4, Employee's Withholding Allowance Certificate.

See Circular E, Employer's Tax Guide, for Federal income tax withholding tables. You can get Form W–4 and Circular E at IRS offices.

FUTA Tax.—The Federal Unemployment Tax Act (FUTA) has been expanded to cover certain employees doing farmwork. In general, you must file the 1980 Form 940, Employer's Annual Federal Unemployment Tax Return, by January 31, 1981, if either of the following applies:

- You paid cash wages of $20,000 or more to farmworkers in any calendar quarter in 1979 or 1980.

Or,

- You employed 10 or more farmworkers during some part of a day for at least one day in 20 different weeks in 1979 or 1980.

Count as farmworkers any aliens legally admitted to the United States on a temporary basis to do farmwork in 1980 (after 1980, in the current or preceding year) to determine if you meet either of the above tests. However, wages paid to these aliens are not subject to FUTA tax until 1982.

For more information, see Circular A and the instructions for Form 940.

When to File Form 943.—For 1980, file Form 943 by January 31, 1981. However, if you made deposits on time in full payment of the taxes due for the year, you may file the return by February 10, 1981.

If the due date for filing a return or making a tax deposit falls on Saturday, Sunday, or a legal holiday, you may file the return or make the deposit on the first day afterward that is not a Saturday, Sunday, or legal holiday.

After you file your first return, we will send you a form every year. If you don't have a form, get one from an IRS office in time to file the return when due.

If you receive a form for a year in which you are not liable for filing, write NONE on line 9 and send the form back to the Internal Revenue Service. If you stop paying wages during the year, file a final return for 1980. Be sure to fill in line 13. If you later become liable for any of the taxes, notify IRS.

Where to File.—

If your legal residence, principal place of business, office, or agency is in ▼	File with the Internal Revenue Service Center at ▼
New Jersey, New York City and counties of Nassau, Rockland, Suffolk, and Westchester	Holtsville, NY 00501
New York (all other counties), Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont	Andover, MA 05501
District of Columbia, Delaware, Maryland, Pennsylvania	Philadelphia, PA 19255
Alabama, Florida, Georgia, Mississippi, South Carolina	Atlanta, GA 31101
Michigan, Ohio	Cincinnati, OH 45999
Arkansas, Kansas, Louisiana, New Mexico, Oklahoma, Texas	Austin, TX 73301
Alaska, Arizona, Colorado, Idaho, Minnesota, Montana, Nebraska, Nevada, North Dakota, Oregon, South Dakota, Utah, Washington, Wyoming	Ogden, UT 84201
Illinois, Iowa, Missouri, Wisconsin	Kansas City, MO 64999
California, Hawaii	Fresno, CA 93888
Indiana, Kentucky, North Carolina, Tennessee, Virginia, West Virginia	Memphis, TN 37501
If you have no legal residence or principal place of business in any State	Philadelphia, PA 19255

Forms W–2 and W–3.—You must give a Form W–2 to every employee to whom you paid any amount for services, in cash or otherwise, if you are in a trade or business.

By January 31, 1981, give Form W–2 to each employee who was working for you at the end of 1980. If an employee stops working for you before the end of the year, give him or her Form W–2 any time after employment ends but no later than January 31 of the following year. However, if the employee asks you for Form W–2, give him or her the completed form within 30 days of the request or the last wage payment, whichever is later.

By February 28, 1981, send Copy A of all Forms W–2 issued for 1980 to the Social Security Administration. Send them with Form W–3, Transmittal of Income and Tax Statements, to the SSA office for your State. The SSA addresses are in the instructions for Form W–3.

We will send you a Form W–3 during the fourth quarter. If you don't receive it, get Form W–3 from an IRS office.

For details, see the instructions for the forms.

Filing on Magnetic Media.—You may use magnetic media instead of filing Copy A of Form W–2. You can get the rules for reporting W–2 information on magnetic media from the Magnetic Media Coordinator at any Internal Revenue Service Center, or from the Social Security Administration, Office of Operational Policy and Procedures, P.O. Box 2317, Baltimore, MD 21203.

Assignment Sheet #3--See following pages

Answers to Assignment Sheet #3

SCHEDULE SE (Form 1040)
Department of the Treasury
Internal Revenue Service

Computation of Social Security Self-Employment Tax

▶ See Instructions for Schedule SE (Form 1040).
▶ Attach to Form 1040.

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1980
23

Name of self-employed person (as shown on social security card)

Social security number of self-employed person ▶

Part I Computation of Net Earnings from FARM Self-Employment

Regular Method			
1 Net profit or (loss) from:			
a Schedule F (Form 1040)	1a	14,781	20
b Farm partnerships	1b		
2 Net earnings from farm self-employment (add lines 1a and 1b)	2	14,781	20
Farm Optional Method			
3 If gross profits from farming are: a Not more than $2,400, enter two-thirds of the gross profits b More than $2,400 and the net farm profit is less than $1,600, enter $1,600	3		
4 Enter here and on line 12a, the amount on line 2, or line 3 if you elect the farm optional method	4	14,781	20

Part II Computation of Net Earnings from NONFARM Self-Employment **SE**

Regular Method			
5 Net profit or (loss) from:			
a Schedule C (Form 1040)	5a		
b Partnerships, joint ventures, etc. (other than farming)	5b		
c Service as a minister, member of a religious order, or a Christian Science practitioner. (Include rental value of parsonage or rental allowance furnished.) If you filed Form 4361 and have not revoked that exemption, check here ▶ ☐ and enter zero on this line	5c		
d Service with a foreign government or international organization	5d		
e Other (specify) ▶	5e		
6 Total (add lines 5a through 5e)	6		
7 Enter adjustments if any (attach statement, see page 29 of Instructions)	7		
8 Adjusted net earnings or (loss) from nonfarm self-employment (line 6, as adjusted by line 7)	8		
Note: *If line 8 is $1,600 or more or if you do not elect to use the Nonfarm Optional Method, skip lines 9 through 11 and enter amount from line 8 on line 12b.*			
Nonfarm Optional Method			
9 a Maximum amount reportable under both optional methods combined (farm and nonfarm)	9a	$1,600	00
b Enter amount from line 3. (If you did not elect to use the farm optional method, enter zero.)	9b		
c Balance (subtract line 9b from line 9a)	9c		
10 Enter two-thirds of gross nonfarm profits or $1,600, whichever is smaller	10		
11 Enter here and on line 12b, the amount on line 9c or line 10, whichever is smaller	11		

Part III Computation of Social Security Self-Employment Tax

12 Net earnings or (loss):			
a From farming (from line 4)	12a	14,781	20
b From nonfarm (from line 8, or line 11 if you elect to use the Nonfarm Optional Method)	12b		
13 Total net earnings or (loss) from self-employment reported on lines 12a and 12b. (If line 13 is less than $400, you are not subject to self-employment tax. Do not fill in rest of schedule)	13	14781	20
14 The largest amount of combined wages and self-employment earnings subject to social security or railroad retirement taxes for 1980 is	14	$25,900	00
15 a Total "FICA" wages (from Forms W-2) and "RRTA" compensation — 15a			
b Unreported tips subject to FICA tax from Form 4137, line 9 or to RRTA — 15b			
c Add lines 15a and 15b	15c	0	00
16 Balance (subtract line 15c from line 14)	16	14,781	20
17 Self-employment income—line 13 or 16, whichever is smaller	17	14,781	20
18 Self-employment tax. (If line 17 is $25,900, enter $2,097.90; if less, multiply the amount on line 17 by .081.) Enter here and on Form 1040, line 48	18	1,197	27

Assignment Sheet #4--See following pages

Answers to Assignment Sheet #4

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Form **3468**
Department of the Treasury
Internal Revenue Service

Computation of Investment Credit

▶ Attach to your tax return.

1980
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Name

Identifying number as shown on page 1 of your tax return

Check the box(es) below that apply to you:

A The corporation elects the basic or basic and matching employee plan percentage under section 48(n)(1) ☐
B I elect to increase my qualified investment to 100% for certain commuter highway vehicles under section 46(c)(6) ☐
C I elect to increase my qualified investment by all qualified progress expenditures made this tax year and all later years ☐
D I claim full credit on certain ships under section 46(g)(3). (See the General Instructions for details.) ☐

1 Use the format below to list your qualified investment in new or used property acquired or constructed and placed in service during the tax year. Also list qualified progress expenditures made during the tax year and qualified rehabilitation expenditures for the year. See the instructions for lines 1(a) through 1(i).
Note: Include your share of investment in property made by a partnership, estate, trust, small business corporation, or lessor.

Type of property	Line	(1) Life years	(2) Cost or basis	(3) Applicable percentage	(4) Qualified investment (Column 2 x column 3)
New property	(a)	3 or more but less than 5		33⅓	
	(b)	5 or more but less than 7		66⅔	
	(c)	7 or more	83,210.00	100	83,210.00
New commuter highway vehicle	(d)	3 or more		100	
Qualified progress expenditures	(e)	7 or more		100	
Used property (See instructions for dollar limits)	(f)	3 or more but less than 5	800.00	33⅓	266.40
	(g)	5 or more but less than 7	500.00	66⅔	333.35
	(h)	7 or more		100	
Used commuter highway vehicle	(i)	3 or more		100	

2 Qualified investment—Add lines 1(a) through (i) (see General Instructions for special limits)		83,809.75
3 10% of line 2 (see instruction for line 3 for special limits)		8,380.97
4 Corporations electing the basic or basic and matching employee plan percentage for contributions to tax credit employee stock ownership plans—Check election box A above (see instruction or line 4).		
(a) Basic 1% credit—Enter 1% of line 2		
(b) Matching credit (not more than 0.5%)—Enter allowable percentage times adjusted line 2 (attach schedule)		
5 Regular investment credit from cooperative		
6 Total—Add lines 3 through 5		8,380.97
7 Carryover of unused credit(s)		-0-
8 Carryback of unused credit(s)		-0-
9 Tentative regular investment credit—Add lines 6, 7, and 8		8,380.97
10 (a) Individuals—Enter amount from Form 1040, line 37, page 2 (b) Estates and trusts—Enter amount from Form 1041, line 26, page 1 (c) Corporations—Enter amount from Schedule J (Form 1120), line 3, page 3 (d) Others—Enter tax before credits from your return		1,256.00
11 (a) Credit for the elderly (individuals only)		
(b) Foreign tax credit		
(c) Tax on lump-sum distribution from Form 4972 or Form 5544		
(d) Possessions corporation tax credit (corporations only)		
(e) Section 72(m)(5) penalty tax (individuals only)		
12 Total—Add lines 11(a) through (e)		0.00
13 Subtract line 12 from line 10		1,256.00
14 (a) Enter smaller of line 13 or $25,000. See instruction for line 14		1,256.00
(b) If line 13 is more than line 14(a) and you are a 1980 calendar year taxpayer, enter 70% of the excess (if your tax year ends in 1981, enter 80% of the excess). (Railroads, and airlines see instruction for line 14.)		
15 Regular investment credit limitation—Add lines 14(a) and (b)		1,256.00
16 Allowed regular investment credit—Enter the smaller of line 9 or line 15		1,256.00
17 Business energy investment credit limitation—subtract line 16 from line 13		
18 Business energy investment credit (from line 11, Schedule B on page 2)		
19 Allowed business energy investment credit—Enter smaller of line 17 or line 18		-0-
20 Total allowed regular and business energy investment credit—Add lines 16 and 19. Enter here and on Form 1040, line 41; Schedule J (Form 1120), line 4(b), page 3; or the proper line on other returns		1,256.00

Tax Liability Limitations

Form **3468** (1980)

Answers to Assignment Sheet #4

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Form 3468 (1980) Page 2

Schedule A If any part of your investment in line 1, page 1, or Schedule B below was made by a partnership, estate, trust, small business corporation, or lessor, complete the following schedule and identify property qualifying for the regular or energy investment credit.

Name (Partnership, estate, trust, etc.)	Address	Property			
		Progress expenditures	New	Used	Life years
		$	$	$	

Schedule B **Business Energy Investment Credit (See Instructions for line 18.)**

List your qualified investment in new energy property acquired or constructed and placed in service during the tax year. Also list qualified progress expenditures made during the tax year.

Type of Property	(1) Life years	(2) Cost or basis	(3) Applicable percentage	(4) Qualified investment (Column 2 x column 3)
1 (a) Alternative energy property	3 or more but less than 5		33⅓	
	5 or more but less than 7		66⅔	
	7 or more		100	
(b) Specially defined energy property	3 or more but less than 5		33⅓	
	5 or more but less than 7		66⅔	
	7 or more		100	
(c) Recycling equipment	3 or more but less than 5		33⅓	
	5 or more but less than 7		66⅔	
	7 or more		100	
(d) Shale oil equipment	3 or more but less than 5		33⅓	
	5 or more but less than 7		66⅔	
	7 or more		100	
(e) Equipment for producing natural gas from geopressured brine	3 or more but less than 5		33⅓	
	5 or more but less than 7		66⅔	
	7 or more		100	
(f) Cogeneration equipment	3 or more but less than 5		33⅓	
	5 or more but less than 7		66⅔	
	7 or more		100	
(g) Qualified intercity buses	3 or more but less than 5		33⅓	
	5 or more but less than 7		66⅔	
	7 or more		100	
(h) Total 10% energy investment property (add lines 1(a) through (g))			▨	
2 (a) Qualified hydroelectric generating equipment Nameplate KWH ▶	3 or more but less than 5		33⅓	
	5 or more but less than 7		66⅔	
	7 or more		100	
(b) Total 11% energy investment property (add line 2(a))			▨	
3 (a) Solar and wind equipment	3 or more but less than 5		33⅓	
	5 or more but less than 7		66⅔	
	7 or more		100	
(b) Ocean thermal equipment	3 or more but less than 5		33⅓	
	5 or more but less than 7		66⅔	
	7 or more		100	
(c) Geothermal equipment	3 or more but less than 5		33⅓	
	5 or more but less than 7		66⅔	
	7 or more		100	
(d) Total 15% energy investment property (add lines 3(a) through 3(c))			▨	

4 Enter 10% of line 1(h) column (4) . . . .

5 Enter 11% of line 2(b) column (4) . . . .

6 Enter 15% of line 3(d) column (4) . . . .

7 Business energy investment credit from cooperative . . . .

8 Current year business energy investment credit—Add lines 4 through 7 . . . .

9 Carryover of unused credit(s) . . . .

10 Carryback of unused credit(s) . . . .

11 Tentative business energy investment credit—Add lines 8 through 10. Enter here and on line 18 on page 1 . . . .

Assignment Sheet #5--See following pages

Answers to Assignment Sheet #5

Form **4797**
Department of the Treasury
Internal Revenue Service

Supplemental Schedule of Gains and Losses

(Includes Gains and Losses From Sales or Exchanges of Assets Used in a Trade or Business and Involuntary Conversions)
To be filed with Form 1040, 1041, 1065, 1120, etc.—See Separate Instructions

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1980

Name(s) as shown on return: Jerry Brown's Dairy Farm

Identifying number as shown on page 1 of your tax return: 000-00-0008

Part I Sales or Exchanges of Property Used in a Trade or Business, and Involuntary Conversions From Other Than Casualty and Theft—Property Held More Than 1 Year (Except for Certain Livestock)

Note: *Use Form 4684 to report involuntary conversions from casualty and theft.*
Caution: *If you sold property on which you claimed the investment credit, you may be liable for recapture of that credit. See Form 4255 for additional information.*

a. Kind of property (if necessary, attach additional descriptive details not shown below)	b. Date acquired (mo., day, yr.)	c. Date sold (mo., day, yr.)	d. Gross sales price minus expense of sale	e. Depreciation allowed (or allowable) since acquisition	f. Cost or other basis, plus improvements	g. LOSS (f minus d plus e)	h. GAIN (d plus e minus f)
1 Cows, Raised (5)	1977	1-9-81	525.00	-0-	-0-		2,625.00
2 Gain, if any, from Form 4684, Part II, line 25							
3 Gain, if any, from line 26, Part III, on back of this form attributable to other than casualty and theft							1,357.00
4 Add lines 1 through 3 in column g and column h						-0-	3,982.00
5 Combine line 4, column g and line 4, column h. Enter here, and on the appropriate line as follows:							3,982.00

(a) For all except partnership returns:
(1) If line 5 is a gain, enter the gain as a long-term capital gain on Schedule D (Form 1040, 1120, etc.) that is being filed. See instruction E.
(2) If line 5 is zero or a loss, enter that amount on line 6.
(b) For partnership returns: Enter the amount shown on line 5 above, on Schedule K (Form 1065), line 8.

Part II Ordinary Gains and Losses

a. Kind of property (if necessary, attach additional descriptive details not shown below)	b. Date acquired (mo., day, yr.)	c. Date sold (mo., day, yr.)	d. Gross sales price minus expense of sale	e. Depreciation allowed (or allowable) since acquisition	f. Cost or other basis, plus improvements	g. LOSS (f minus d plus e)	h. GAIN (d plus e minus f)
6 Loss, if any, from line 5(a)(2)							
7 Gain, if any, from line 25, Part III on back of this form							
8 Net gain or (loss) from Form 4684, lines 17 and 24a						-0-	10,544.00
9 Other ordinary gains and losses (include property held 1 year or less):							
Dairy Cow #21	1-6-81	4-13-81	446.00		800.00	354.00	
10 Add lines 6 through 9 in column g and column h						364.00	10,544.00
11 Combine line 10, column g and line 10, column h. Enter here, and on the appropriate line as follows:							10,190.00

(a) For all except individual returns: Enter the gain or (loss) shown on line 11, on the line provided for on the return (Form 1120, etc.) being filed. See instruction F for specific line reference.
(b) For individual returns:
(1) If the loss on line 6 includes a loss from Form 4684, Part II, column B(ii), enter that part of the loss here and on line 29 of Schedule A (Form 1040). Identify as from "Form 4797, line 11(b)(1)"
(2) Redetermine the gain or (loss) on line 11, excluding the loss (if any) entered on line 11(b)(1). Enter here and on Form 1040, line 16 — 10,190.00

Part III Gain From Disposition of Property Under Sections 1245, 1250, 1251, 1252, 1254, 1255

Skip lines 20 and 21 if there are no dispositions of farm property or farmland, or if this form is filed by a partnership.

12 Description of sections 1245, 1250, 1251, 1252, 1254, and 1255 property:	Date acquired (mo., day, yr.)	Date sold (mo., day, yr.)
(A) J.D. Tractor	6-25-72	1-7-81
(B) Mower	4-16-73	2-19-81
(C) Dairy Cow #41	2-17-75	10-23-81
(D) Dairy Cow #52	5-11-78	10-1-81

Answers to Assignment Sheet #5

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Form 4797 (1980) Page 2

Relate lines 12(A) through 12(D) to these columns ▶ ▶ ▶	Property (A)	Property (B)	Property (C)	Property (D)
13 Gross sales price minus expense of sale	11,500.00	150.00	502.00 *	685.00 **
14 Cost or other basis	10,250.00	290.00	395.00	850.00
15 Depreciation (or depletion) allowed (or allowable)	10,250.00	290.00	95.00	214.00
16 Adjusted basis, subtract line 15 from line 14	-0-	-0-	300.00	636.00
17 Total gain, subtract line 16 from line 13	11,500.00	150.00	202.00	49.00
18 If section 1245 property:				
(a) Depreciation allowed (or allowable) after applicable date (see instructions)	10,260.00	290.00	95.00	214.00
(b) Enter smaller of line 17 or 18(a)	10,250.00	150.00	95.00	49.00
19 If section 1250 property:				
(a) Additional depreciation after 12/31/75 (see instructions)				
(b) Applicable percentage times the smaller of line 17 or line 19(a) (see instruction G.4)				
(c) Subtract line 19(a) from line 17. (If line 17 is not more than line 19(a), skip lines 19(d) through 19(h). Enter the amount from line 19(b) on line 19(i).)				
(d) Additional depreciation after 12/31/69 and before 1/1/76				
(e) Applicable percentage times the smaller of line 19(c) or 19(d) (see instruction G.4)				
(f) Subtract line 19(d) from line 19(c). (If line 19(c) is not more than line 19(d), skip lines 19(g) and 19(h). Combine the amounts on lines 19(b) and 19(e) on line 19(i).)				
(g) Additional depreciation after 12/31/63 and before 1/1/70				
(h) Applicable percentage times the smaller of line 19(f) or 19(g) (see instruction G.4)				
(i) Add lines 19(b), 19(e), and 19(h)				
20 If section 1251 property:				
(a) If farmland, enter soil, water, and land clearing expenses for current year and the four preceding years				
(b) If farm property other than land, subtract line 18(b) from line 17; if farmland, enter smaller of line 17 or 20(a) (see instruction G.5)				
(c) Excess deductions account (see instruction G.5)				
(d) Enter smaller of line 20(b) or 20(c)				
21 If section 1252 property:				
(a) Soil, water, and land clearing expenses made after 12/31/69				
(b) Amount from line 20(d), if none enter a zero				
(c) Subtract line 21(b) from line 21(a). (If line 21(b) is more than line 21(a), enter zero.)				
(d) Line 21(c) times applicable percentage (see instruction G.5)				
(e) Subtract line 21(b) from line 17				
(f) Enter smaller of line 21(d) or 21(e)				
22 If section 1254 property:				
(a) Intangible drilling and development costs deducted after 12/31/75 (see instruction G.6)				
(b) Enter smaller of line 17 or 22(a)				
23 If section 1255 property:				
(a) Applicable percentage of payments excluded from income under section 126 (see instruction G.7)				
(b) Enter the smaller of line 17 or 23(a)				

Cow #41
Sale Price 516
Expense of Sale 14
502

Cow #52
Sale Price 699
Expense of Sale 14
685

Summary of Part III Gains (Complete Property columns (A) through (D) through line 23(b) before going to line 24)

24 Total gains for all properties (add columns (A) through (D), line 17)	11,901.00
25 Add columns (A) through (D), lines 18(b), 19(i), 20(d), 21(f), 22(b) and 23(b). Enter here and on Part II, line 7	10,544.00
26 Subtract line 25 from line 24. Enter the portion attributable to casualty and theft on Form 4684, line 19; enter the portion attributable to other than casualty and theft on Form 4797, Part I, line 3	1,357.00

Answers to Assignment Sheet #5

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SCHEDULE D
(Form 1040)
Department of the Treasury
Internal Revenue Service

Capital Gains and Losses

(Examples of property to be reported on this Schedule are gains and losses on stocks, bonds, and similar investments, and gains (but not losses) on personal assets such as a home or jewelry.)
▶ Attach to Form 1040. ▶ See Instructions for Schedule D (Form 1040).

1980
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Name(s) as shown on Form 1040: Jerry Brown's Dairy Farm

Your social security number: 000 00 0008

Part I **Short-term Capital Gains and Losses—Assets Held One Year or Less** **D**

a. Kind of property and description (Example, 100 shares 7% preferred of "Z" Co.)	b. Date acquired (Mo., day, yr.)	c. Date sold (Mo., day, yr.)	d. Gross sales price less expense of sale	e. Cost or other basis, as adjusted (see instructions page 21)	f. LOSS if column (e) is more than (d) subtract (d) from (e)	g. GAIN if column (d) is more than (e) subtract (e) from (d)
1 25 shares H.T. Corp.	12-1-80	3-5-81	380.00	430.00	50 00	

2 Gain from sale or exchange of a principal residence held one year or less, from Form 2119, lines 7 or 11	2	▨		
3 Enter your share of net short-term gain or (loss) from partnerships and fiduciaries	3			
4 Add lines 1, 2 and 3 in column f and column g	4	50 00		-0-
5 Combine line 4, column f and line 4, column g and enter the net gain or (loss)			5	<50 00>
6 Short-term capital loss carryover from years beginning after 1969			6	( )
7 Net short-term gain or (loss), combine lines 5 and 6			7	<50 00>

Part II **Long-term Capital Gains and Losses—Assets Held More Than One Year**

8 40 shares H.T. Corp.	2-1-67	7-1-81	1,000.00	255.00		745 00

9 Gain from sale or exchange of a principal residence held more than one year, from Form 2119, lines 7, 11, or 18	9	▨		
10 Enter your share of net long-term gain or (loss) from partnerships and fiduciaries	10			
11 Add lines 8, 9 and 10 in column f and column g	11	-0-		745 00
12 Combine line 11, column f and line 11, column g and enter the net gain or (loss)			12	745 00
13 Capital gain distributions			13	
14 Enter gain, if applicable, from Form 4797, line 5(a)(1)			14	3,982 00
15 Enter your share of net long-term gain from small business corporations (Subchapter S)			15	
16 Combine lines 12 through 15			16	4,727 00
17 Long-term capital loss carryover from years beginning after 1969			17	( )
18 Net long-term gain or (loss), combine lines 16 and 17			18	4,727 00

Note: *If you have capital loss carryovers from years beginning before 1970, do not complete rest of form. See Form 4798 instead. Otherwise, complete this form on reverse.*

Answers to Assignment Sheet #5

(82)

Schedule D (Form 1040) 1980 — Page 2

Part III Summary of Parts I and II

19 Combine lines 7 and 18, and enter the net gain or (loss) here	19	4,677	00
20 If line 19 shows a gain—			
a Enter 60% of line 18 or 60% of line 19, whichever is smaller. Enter zero if there is a loss or no entry on line 18 *If the amount you enter on this line is other than zero, you may be liable for the alternative minimum tax. See Form 6251.*	20a	2,806	20
b Subtract line 20a from line 19. Enter here and on Form 1040, line 14	20b	1,870	80
21 If line 19 shows a loss—			
a Enter one of the following amounts: (i) If line 7 is zero or a net gain, enter 50% of line 19, (ii) If line 18 is zero or a net gain, enter line 19; or, (iii) If line 7 and line 18 are net losses, enter amount on line 7 added to 50% of the amount on line 18	21a		
b Enter here and enter as a loss on Form 1040, line 14, the smallest of: (i) The amount on line 21a, (ii) $3,000 ($1,500 if married and filing a separate return); or, (iii) Taxable income, as adjusted	21b		
Note: *If the loss on line 21a is more than the loss shown on line 21b, complete Part IV to determine post-1969 capital loss carryover from 1980 to 1981.*		▨	▨

Part IV Computation of Post-1969 Capital Loss Carryovers from 1980 to 1981
(Complete this part if the loss on line 21a is more than the loss shown on line 21b)

Section A.—Short-term Capital Loss Carryover

22 Enter loss shown on line 7; if none, enter zero and skip lines 23 through 27—then go to line 28	22		
23 Enter gain shown on line 18. If that line is blank or shows a loss, enter zero	23		
24 Reduce any loss on line 22 to the extent of any gain on line 23	24		
25 Enter amount shown on line 21b	25		
26 Enter smaller of line 24 or 25	26		
27 Subtract line 26 from line 24 **Note:** *The amount on line 27 is the part of your short-term capital loss carryover from 1980 to 1981 that is from years beginning after 1969.*	27	▨	▨

Section B.—Long-term Capital Loss Carryover

28 Subtract line 26 from line 25. (**Note:** *if you skipped lines 23 through 27, enter amount from line 21b*)	28		
29 Enter loss from line 18; if none, enter zero and skip lines 30 through 33	29		
30 Enter gain shown on line 7. If that line is blank or shows a loss, enter zero	30		
31 Reduce any loss on line 29 to the extent of any gain on line 30	31		
32 Multiply amount on line 28 by 2	32		
33 Subtract line 32 from line 31 **Note:** *The amount on line 33 is the part of your long-term capital loss carryover from 1980 to 1981 that is from years beginning after 1969.*	33	▨	▨

INCOME TAX FORMS
UNIT I

TEST

NAME_____________________________ SCORE____________________

1. Match terms associated with income tax forms to the correct definitions. Write the correct numbers in the blanks provided.

_____a. For income tax purposes, any property owned and used for personal purposes, pleasure, or investment

_____b. Sum of the expected income tax and self-employment tax minus expected withholdings and credits

_____c. Adjusted gross income less the sum of excess itemized deductions and personal exemptions

_____d. Property used in the farming business or for the production of rents or royalties and held more than one year; any property held more than one year that is subject to involuntary conversion

_____e. Person who occupies a position of special confidence toward others

_____f. Repayment of a loan with a regular series of payments over a specified period of time

_____g. Any asset that is not a capital asset

_____h. Gain realized from the sale of a capital asset when the asset is sold for more than its initial purchase price

_____i. Decline in the value of an asset due to wear and tear, action of elements, and obsolescence

_____j. Loss realized from the sale of a capital asset when the asset is sold for less than its initial purchase price

1. Amoritization
2. Taxable income
3. Fiduciary
4. Capital assets
5. Estimated tax
6. Property used in farming
7. Ordinary asset
8. Capital gain
9. Capital loss
10. Depreciation

_____k. The using up of natural resources by the process of minining, quarrying, drilling, and felling

_____l. Original cost of an asset plus the value of improvements or alterations less the cost of depreciation, losses, or depletion

_____m. Legal entity separate and distinct from shareholders who own it, from the individuals who manage it, or from its employees

_____n. Laying out of funds in a business with the view of obtaining an income or profit

_____o. An individual who owns, manages, assumes all the risk, and derives all the profits from a business

_____p. Credit against or reduction in federal income tax equal to 10 percent of qualified investments

_____q. Created when two or more persons join together to conduct a business and to share in its profits and losses

11. Investment
12. Investment tax credit
13. Sole proprietorship
14. Partnership
15. Corporation
16. Adjusted basis
17. Depletion

2. Select from the following list factors to consider in determining filing status. Mark each correct answer with an "X" in the blanks provided.

_____a. Cooperators must file if they are widows or widowers with dependent children and earn over $4,400, if under age 65, or over $5,400, if over age 65

_____b. Cooperators must file if self-employed and net earnings from self-employment are at least $400

_____c. Cooperators, generally, will never have to file an income tax return because of self-employment

_____d. Cooperators must file if married, filing jointly, living with their spouse and earn at least $5,400, if both are under age 65, $6,400, if one is 65 or older, or $7,400, if both are 65 or older

_____e. Cooperators must file if they are self-employed and net earning from self-employment is at least $650

_____f. Cooperators must file if single, legally separated, divorced, or married but living apart from their spouse for the entire year; and earn at least $3,300, if under the age of 65, or $4,300, if over the age 65 ______g. Cooperators must file if they are widows or widowers with no dependents and earn over $5,400, if under age 65, or over $6,500, if over age 65

______h. Cooperators must file if they can be claimed as a dependent on their parents' return and have taxable dividends, interest, or other unearned income of $1,000 or more

3. State when to file your income tax form. Write your answer in the space provided.

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4. Discuss factors to consider in filling out Form 1040. Write your answer in the blanks provided.

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5. Match types of income tax forms usually used by farmers to their correct descriptions. Write the correct numbers in the blanks provided.

______a. Small business corporation income tax return used by Subchapter S corporations

______b. Your individual income tax return

______c. Employer's annual tax return for agricultural employees

______d. Used to figure the alternative minimum tax

______e. Used to figure your investment credit

______f. Employer's annual federal unemployment tax return

______g. Corporation income tax return filed by ordinary corporation

______h. List of your nonbusiness deductions

______i. Used to declare an estimate of your tax if you choose to estimate

______j. Used to summarize and transmit the various 1099 forms

______k. Used to figure the tax from recomputing a prior year's investment credit

______l. Used to figure the tax credit for federal tax on gasoline, special fuels, and lubricating oil

______m. Used to figure your residential energy credit if you had energy saving items installed in your principal residence

______n. Information return used to report the total payments of $600 or more you make during the year to another person in the course of your trade or business

______o. List of your interest and dividend income

______p. Used to report gains and losses from casualty and theft of business and personal use property

______q. Used to show your gains and losses from sales of capital assets

1. Form 1040
2. Schedule A (1040)
3. Schedule B (1040)
4. Form 1120-S
5. Form 940
6. Schedule D (1040)
7. Form 5695
8. Form 4684
9. Form 3468
10. Form 4255
11. Form 4136
12. Form 943
13. Form 1040 ES
14. Form 1120
15. Form 1096
16. Form 1099
17. Form 6251

_____r. Wage and tax statement which must be prepared for every employee to whom you paid cash wages subject to the employee Social Security tax or from whose wages, in voluntary agreement with the employee, you withheld federal income tax

_____s. Information return showing the income and deductions of a partnership

_____t. List of all your farm income and deductions which determines your net farm profit or loss

_____u. Federal use tax return on highway motor vehicles which must be filed if you have a truck or truck-tractor registered in your name that is a highway motor vehicle, if it is required to be registered for highway use, if it is actually used at least once on a public highway, and if it comes within one of the taxable categories as to type and weight

_____v. Used by farmers to figure any underpayment of estimated tax and the underpayment penalty

_____w. Used to figure your Social Security self-employment tax

_____x. Used to report gains and losses from the sale or exchange of business property and from certain involuntary conversions

18. Form 4797
19. Schedule SE(1040)
20. Form 10-2
21. Form 2290
22. Form 1065
23. Form 2210-F
24. Schedule F (1040)

6. Complete Schedule F, Form 1040.

7. Compute employer's annual tax return for agricultural employees using Form 943.

8. Compute Social Security self-employment tax.

9. Compute investment tax credit on Form 3468.

10. Determine capital gains and losses on Form 4797 and Schedule D.

(NOTE: If any of the above activities have not been done before the test, ask the instructor when they should be finished.)

INCOME TAX FORMS
UNIT I

ANSWERS TO TEST

1.

a.	4	f.	1	j.	9	n.	11
b.	5	g.	7	k.	17	o.	13
c.	2	h.	8	l.	16	p.	12
d.	6	i.	10	m.	15	q.	14
e.	3						

2. a, b, d, f, h

3. Answer should include:

   a. File an estimate of your tax and pay this amount by January 15 of the following year, then file the return for the prior year and pay any balance due by April 15.

   b. File your prior year's return and pay the tax on or before March 1

4. Answer should include:

   a. Determine whether the individual was married or single

   b. One exemption is allowed for the individual filing the return; exemptions also are allowed for a spouse, being 65 or over and blind, and having dependents, such as children, mother, or father

   c. All wages should be reported

   d. Some income may not need to be reported

   e. Cooperator may adjust taxable income with moving expenses, employee business expenses, and payment to Keogh (H.R.10) Retirement Plan

5.

a.	4	f.	5	k.	10	p.	8	u.	21
b.	1	g.	14	l.	11	q.	6	v.	23
c.	12	h.	2	m.	7	r.	20	w.	19
d.	17	i.	13	n.	16	s.	22	x.	18
e.	9	j.	15	o.	3	t.	24		

6. Evaluated to satisfaction of instructor
7. Evaluated to satisfaction of instructor
8. Evaluated to satisfaction of instructor
9. Evaluated to satisfaction of instructor
10. Evaluated to satisfaction of instructor

NET WORTH STATEMENTS
UNIT II

UNIT OBJECTIVE

After completion of this unit, the cooperator should be able to complete a net worth statement and use a spread sheet to analyze net worth statement. This knowledge will be evidenced by completion of assignment sheets and unit test with a minimum of 85 percent accuracy.

SPECIFIC OBJECTIVES

After completion of this unit, the cooperator should be able to:

1. Match terms associated with net worth statements to the correct definitions.
2. State purposes of a net worth statement.
3. Distinguish among assets according to time and convertibility.
4. Define liabilities according to time.
5. State the mathematical formula for determining net worth.
6. Select from a list characteristics of current ratio.
7. Select from a list characteristics of working asset ratio.
8. Select from a list characteristics of net capital ratio.
9. Select from a list characteristics of debt-to-equity ratio.
10. Select from a list characteristics of percent equity ratio.
11. Complete a net worth statement.
12. Use a spread sheet to analyze net worth.

NET WORTH STATEMENTS
UNIT II

SUGGESTED ACTIVITIES

I. Suggested activities for the instructor:

  A. Provide cooperators with objective sheet.

  B. Provide cooperators with information and assignment sheets.

  C. Discuss unit and specific objectives.

  D. Discuss information and assignment sheets.

  E. Assist cooperator with completing computerized whole farm and detailed enterprise analysis input forms during on-farm visit. Submit completed input forms to OSU Ag. Economics, Ag. Hall 513, Stillwater, OK 74078.

  F. Assist each cooperator during on-farm visit with completing the net worth statement and interpreting results.

  G. Give test.

  H. Critique test.

  I. Reteach, if necessary.

II. Instructional materials:

  A. Objective sheet

  B. Information sheet

  C. Assignment sheets

    1. Assignment Sheet #1--Complete a Net Worth Statement

    2. Assignment Sheet #2--Use a Spread Sheet to Analyze Net Worth

  D. Answers to assignment sheets

  E. Test

  F. Answers to test

III. Unit references:

  A. Casey, James E., Jr., and Roush, Clint E. *Financial Records: Net Worth Statement*. Oklahoma State University Extension Facts, No. 711. Stillwater: Oklahoma State University, 1978.

  B. Miller, Donald E. *The Meaningful Interpretation of Financial Statements.* New York, New York: American Management Association, 1966.

C. Osburn, Donald D., and Schneeberger, Kenneth C. *Modern Agriculture Management.* Reston, Virginia: Prentice-Hall Company, 1978.

D. James, Sydney C., and Stoneberg, Everett. *Farm Accounting and Business Analysis.* Ames, Iowa: Iowa State University Press, 1974.

E. Barry, Peter J., Hopkin, John A., and Baker, C.B. *Financial Management in Agriculture.* Danville, Illinois: The Interstate Printers and Publishers, Inc., 1979.

F. Burkes, Marshall R., and Henning, George F. *Ratio Analysis Used to Measure Financial Strength of Agriculture Business Corporations.* Wooster, Ohio: Ohio Agricultural Experiment Station, 1963.

NET WORTH STATEMENTS
UNIT II

INFORMATION SHEET

I. Terms and definitions

A. Net worth--Value of assets not claimed by individuals or firms outside the farm business or the owner's claim on those assets

B. Liquidity--Firm's capacity to generate sufficient cash to meet its financial obligations as they fall due

C. Solvency--Firm's ability to meet long-run claims against the business

(NOTE: Solvency indicates total assets exceed total liabilities.)

D. Net worth statement--Statement showing the financial condition at a definite point in time and listing all assets, values of assets, and liabilities of the farm

(NOTE: Net worth statements are also known as *balance sheets, financial statements,* or *statements of financial condition.*)

E. Working capital--Current assets minus current liabilities

(NOTE: Working capital represents the excess of current assets over current liabilities.)

F. Inventory--Assets used in or claimed by the business

G. Assets--Items or resources controlled by the farm business

(NOTE: Methods used in determining asset values should remain consistent from one year to the next.)

H. Liabilities--Financial claims against the farm business

I. Ratio--Relationship in quantity, amount, or size between two or more things

J. Spread sheet--Form used for comparative analysis of net worth statements from several years

(NOTE: The net worth statement should be completed each year at the same time, if the cooperator wishes to measure year-to-year growth and trends.)

INFORMATION SHEET

II. Purposes of a net worth statement

(NOTE: A net worth statement is one of the more common instruments used to measure financial progress in agriculture. It cannot measure profitability except to the extent of increases in net worth from year to year. It does not measure the repayment capacity or ability to meet financial obligations as they fall due.)

A. Measures present financial position

B. Records growth in the farm business through changes in net worth

C. Provides an indication of the amount of debt supported by various classes of assets

D. Provides early warning through ratio analysis of problems that may arise in the short-run, intermediate, and long-run

E. Reveals liquidity and solvency

III. Assets according to time and convertibility

A. Current assets

Examples: Non-breeding livestock; feed; crops; supplies; savings accounts; bonds; marketable securities; pre-paid expenses; accounts receivable

1. Are cash and other liquid assets which may be quickly converted into cash without any loss in value
2. Have well-established markets
3. Have prices which are widely known

B. Intermediate assets

(NOTE: These assets can be bought and sold on a regular basis. Turnover rate of these assets is considered to be greater than one year and less than ten years.)

Examples: Machinery; equipment; tools; breeding stock; securities not easily marketed; irrigation equipment

1. Are primarily used in the production process
2. Are used up in more than one production period
3. Are not legally or directly attached to the land
4. Have markets which are negotiated by individuals
5. Have prices which may not be widely known
6. Are usually not easily converted to cash without some loss in value

INFORMATION SHEET

C. Long-term assets

(NOTE: Long-term assets also are referred to as *fixed assets.*)

Examples: Real estate; buildings; wells; terraces; fences

1. Are used in production and are considered permanent
2. Are not readily converted to cash because they normally are not held for sale
3. Have the least-established markets

IV. Liabilities according to time

(NOTE: Liabilities represent claims upon assets. These usually are grouped according to the time period in which they are due.)

A. Current liabilities--Claims falling due within one year

Examples: Accounts payable; accrued interest; taxes; rent; short-term notes due within the year; principal payment due during the coming year on intermediate and long-term liabilities

(NOTE: Current liabilities usually are claims against current assets of the farm.)

B. Intermediate liabilities--Claims which are for more than one year but less than 10 years

Examples: Loans on irrigation equipment; machinery; equipment; breeding livestock

(NOTE: Intermediate liabilities usually are claims on intermediate term assets.)

C. Long-term liabilities--Claims exceeding 10 years in maturity

Examples: Real estate loans; building loans

(NOTE: Long-term liabilities are counterparts of fixed assets.)

V. Mathematical formula for determining net worth

NET WORTH = TOTAL ASSETS - TOTAL LIABILITIES

(NOTE: Net worth is calculated by subtracting total liabilities from total assets. Net worth figures are useful because they indicate to lenders the risk-bearing capacity of the business. If net worth increases are made up mainly of increases in land values, the economic performance of the business is making little or no contribution to increases in net worth.)

INFORMATION SHEET

VI. Characteristics of current ratio

(NOTE: Certain ratios over time give valuable information which enable the cooperator to make necessary adjustments. Ratio analysis measures movements and trends in average relationships; they are, at best, indications of position with respect to previous points in time. Examine changes within the structure of the farm which have led to changes in net worth. Ratios yield important information about the financial structure of the farm, but do not indicate why strengths or weaknesses exist. Ratios may change over time because of changes in inventory or values of inventory. Values of the discussed ratios in this section will vary by size and type of farm.)

A. Is probably used by more analysts than any other ratio

B. Is calculated as

$$\frac{\text{CURRENT ASSETS}}{\text{CURRENT LIABILITIES}} = \text{CURRENT RATIO}$$

C. Gives cooperator an idea of farm's ability to meet its short-run payment obligations

D. For agriculture, a ratio of 2:1 is considered a good indicator of the firm's ability to meet short-run obligations

Example: A cooperator determines from the current net worth statement that $30,000 worth of current assets are held, and there are $15,000 worth of current liabilities. The ratio is 2:1 or $30,000/$15,000 = 2 to 1.

(NOTE: This ratio will vary by the type and size of the farm business.)

E. A ratio of 1:1 is marginal; below 1:1 indicates potential liquidity problems

(NOTE: If cooperator has a current ratio of below 1:1, current liabilities would have to be met out of income generated on the farm or from non-farm sources. Refinancing might be arranged from intermediate and long-term assets.)

F. Is subjected by many analysts to qualitative tests for each business

VII. Characteristics of working asset ratio

A. Is the ratio of current plus intermediate assets to current plus intermediate liabilities

B. Is calculated as

$$\frac{\text{CURRENT + INTERMEDIATE ASSETS}}{\text{CURRENT + INTERMEDIATE LIABILITIES}} = \text{WORKING ASSET RATIO}$$

C. Is used to determine farm solvency over an intermediate time span of one to 10 years

INFORMATION SHEET

D. Provides valuable information on loan security and repayability; a good rule of thumb for agriculture is a rate of 3:1

(NOTE: Lenders who loan money on machinery and equipment would be interested in this ratio. This ratio will vary by the type and size of the farm business.)

VIII. Characteristics of net capital ratio

A. Compares total farm assets to total farm liabilities

B. Is calculated as

$$\frac{\text{TOTAL FARM ASSETS}}{\text{TOTAL FARM LIABILITIES}} = \text{NET CAPITAL RATIO}$$

C. Is used as an indication of the long-run solvency of the business

D. Interests lenders because it shows debt load in relation to the total asset value of the farm

E. A ratio of less than one indicates that a business is insolvent and could not cover all of its debts if forced to liquidate

F. Lenders generally like to see a ratio of 2:1 which indicates the borrower has substantial risk-bearing ability

(NOTE: If cooperator has a 2:1 net capital ratio, the value of assets could decline by 50% before becoming insolvent.)

IX. Characteristics of debt-to-equity ratio

A. Measures the firm's total financial obligations to creditors in relation to the capital provided by the cooperator

B. Is calculated as

$$\frac{\text{TOTAL LIABILITIES}}{\text{EQUITY (NET WORTH)}} = \text{DEBT-TO-EQUITY RATIO}$$

C. Many lending institutions prefer low leverage ratios and interpret most movement in that direction as progress

D. Higher ratios generate accelerated rates of growth when the rate of return on the investment is greater than the interest rate

(NOTE: This is known as *financial leverage.*)

E. Many lenders prefer the borrower have at least as large of an investment in the farm as the lender

F. Generally speaking, maximum ratios should be 1.0:1

(NOTE: This is not a maximum for all agriculture business; some cooperators may be able to handle a larger rate of 1.5:1 or 3:1.)

INFORMATION SHEET

X. Characteristics of percent equity ratio

A. Is the ratio of net worth to total assets

B. Is calculated as

$$\frac{\text{NET WORTH}}{\text{TOTAL ASSETS}} \times 100 = \text{PERCENT EQUITY RATIO}$$

C. Is a measure of the risk-bearing ability of the farm

D. Lenders prefer to loan on a percent equity above 50%

Example: Net worth is calculated at $200,000; total assets are calculated at $320,000. Percent equity is calculated at 62.5%, for every dollar of assets the cooperator has; 62.5 cents is owner equity and 37.5 cents is debt obligations.

NEW WORTH STATEMENTS
UNIT II

ASSIGNMENT SHEET #1--COMPLETE A NET WORTH STATEMENT

NAME_______________________________________ SCORE ____________

Complete the following net worth statement using the given information for 1981. Do not calculate adjustments to present values or non-farm assets and liabilities.

BEGINNING INVENTORY 1981	BOOK VALUE	CURRENT VALUE
Cash in farm account	$ 8,000	$ 8,000
Beef non-breeding	7,300	7,300
Stored crops	21,750	21,750
Supplies	600	600
Beef breeding	15,000	20,000
Machinery and equipment	15,755	25,000
Buildings	5,500	10,000
Land	295,000	600,000
Portions of intermediate and long-term debt due next year	25,000	25,000
Portions of intermediate term debt due after next year	17,000	17,000
Long-term debt due after next year	90,000	90,000

ENDING INVENTORY 1981		
Cash in farm account	$ 20,500	20,500
Beef non-breeding	17,753	17,753
Stored crops	45,000	45,000
Supplies	5,700	5,700
Beef breeding	25,000	30,000
Machinery and equipment	27,036	35,000
Buildings	6,700	12,000
Land	295,000	600,000
Portion of intermediate and long-term debt due next year	17,000	17,000
Portion of intermediate term debt due after next year	13,527	13,527
Long-term debt due after next year	93,000	93,000

ASSIGNMENT SHEET #1

FORM 6.3 DATE: NET WORTH STATEMENT: FARM AND NON-FARM ASSETS 19____

LINE	NON-FARM ASSETS	BOOK VALUE			CURRENT VALUE		
		BEGINNING	ENDING	NETCHANGE (2-1)	BEGINNING	ENDING	NETCHANGE (5-4)
1	Family Bank Balance	$	$	$	$	$	$
2	Savings						
3	Stocks and Bonds (present value)						
4	Accounts and Notes Receivable						
5	Life Insurance (cash value)						
6	TOTAL NON-FARM CURRENT ASSETS (add 1 thru 5)						
7	Auto and other Vehicles (family share)						
8	Household and Other						
9	Boat, Camper, Etc						
10	Non-Farm Real Estate						
11	TOTAL NON-FARM ASSETS (add 6 thru 10)						
	FARM ASSETS						
12	Cash in Farm Account	$	$	$	$	$	$
13	Farm Accounts Receivable (forms 4.1 + 4.2)						
14	Swine, non-breeding (form 3.6 line 10)						
15	Beef, non-breeding (form 3.6 line 21)						
16	Dairy, non-breeding (form 3.6 line 33)						
17	Other, non-breeding (form 3.6 line 37)						
18	Purchased Feeds (form 3.7 line 5)						
19	Stored Crops (form 3.7 line 16)						
20	Growing Crops (form 3.7 line 19)						
21	Supplies (form 3.7 line 35)						
22	Other Current Assets (form 3.7 line 38)						
23	TOTAL FARM CURRENT ASSETS (add 12 thru 22)						
24	Swine, breeding (form 3.6 line 5)						
25	Beef, breeding (form 3.6 line 16)						
26	Dairy, breeding (form 3.6 line 28)						
27	Other, breeding (form 3.6 line 35)						
28	Farm Accounts Receivable (forms 4.1 + 4.2)						
29	Machinery and Equipment (form 3.2)						
30	TOTAL FARM INTERMEDIATE ASSETS (add 24 thru 29)						
31	Buildings (form 3.5)						
32	Land (form 3.5)						
33	TOTAL FARM LONG TERM ASSETS (add 31 + 32)						
34	TOTAL FARM ASSETS (add 23 + 30 + 33)						
35	TOTAL ASSETS (add 11 + 34)						
	FINANCIAL RATIOS						
A	CURRENT RATIO (FARM) $\frac{\text{Current Assets (form 6.3 line 23)}}{\text{Current Liabilities (form 6.4 line 58)}}$						
B	WORKING ASSET RATIO (FARM) $\frac{\text{Current + Intermediate Assets (form 6.3 lines 23 + 30)}}{\text{Current + Intermediate Liabilities (form 6.4 lines 58 + 62)}}$						
C	NET CAPITAL RATIO (FARM) $\frac{\text{Total Farm Assets (form 6.3 line 34)}}{\text{Total Farm Liabilities (form 6.4 line 67)}}$						
COLUMN		1	2	3	4	5	6

ASSIGNMENT SHEET #1

FORM 6.4 **DATE:** **NET WORTH STATEMENT: FARM AND NON-FARM LIABILITIES** 19____

LINE	NON-FARM LIABILITIES	BOOK VALUE BEGINNING	BOOK VALUE ENDING	BOOK VALUE NET CHANGE (8-7)	CURRENT VALUE BEGINNING	CURRENT VALUE ENDING	CURRENT VALUE NET CHANGE (11-10)
36	Charge Accounts	$	$	$	$	$	$
37	Notes, portion due next year						
38	Mortgages, due next year						
39	Accrued Interest on non-farm liabilities						
40	TOTAL NON-FARM CURRENT LIABILITIES (add 36–39)						
41	Notes, portion due after next year						
42							
43	Mortgages, portion due after next year						
44							
45	TOTAL NON-FARM LIABILITIES (add 40 thru 44)						
46	NON-FARM NET WORTH (line 11 minus line 45)						
	FARM LIABILITIES						
47	Short Term Farm Notes Payable (form 4.4)	$	$	$	$	$	$
48							
49							
50	Accounts Payable (form 4.3)						
51							
52							
53	Credit Lines and Short Term Multipayt Notes (form 4.5)						
54	Intermed. & Long Term Notes Due Next Year (form 4.6)						
55							
56	Accrued Liabilities (taxes, rent, etc.) (form 4.3)						
57	Accrued Interest (form 4.3 thru 4.6)						
58	TOTAL FARM CURRENT LIABILITIES (add 47 thru 57)						
59	Intermed. Term Debt Due After Next Year (form 4.6)						
60							
61							
62	TOTAL FARM INTERMEDIATE LIABILITIES (add 59–61)						
63	Long Term Debt Due After Next Year (form 4.6)						
64							
65							
66	TOTAL FARM LONG TERM LIABILITIES (add 63–65)						
67	TOTAL FARM LIABILITIES (add 58 + 62 + 66)						
68	TOTAL FARM NET WORTH (line 34 minus 67)						
69	TOTAL LIABILITIES (add 45 + 67)						
70	TOTAL NET WORTH (line 35 minus 69)						
	FINANCIAL RATIOS						
D	NET CAPITAL RATIO (FARM & NON-FARM) — $\frac{\text{Total Assets (form 6.3 line 35)}}{\text{Total Liabilities (form 6.4 line 69)}}$						
E	DEBT EQUITY RATIO $\frac{\text{Total Liabilities (form 6.4 line 69)}}{\text{Net Worth (form 6.4 line 70)}}$						
F	PERCENT EQUITY $\frac{\text{Net Worth (form 6.4 line 70)}}{\text{Total Assets (form 6.3 line 35)}}$ X 100	%	%		%	%	
	COLUMN	7	8	9	10	11	12

NET WORTH STATEMENTS
UNIT II

ASSIGNMENT SHEET #2–USE A SPREAD SHEET TO ANALYZE NET WORTH

NAME ______________________ SCORE ____________

Comparing year-to-year growth enables cooperators to determine what changes, if any, need to be made in the farming operations. One method of accomplishing this is by use of what is commonly called a *spread sheet*. A spread sheet allows cooperators to get all information needed for analysis in a neat, orderly fashion. Using the figures given in the spread sheet on the next page, calculate the current ratio, working asset ratio, net capital ratio, debt-to-equity ratio, and percent equity. Interpret all ratios calculated. Use the space provided.

A. Current ratio

1. 1978– ______________
2. 1979– ______________
3. 1980– ______________
4. 1981– ______________
5. Comments: ______________________________

____

____

____

B. Working asset ratio

1. 1978– ______________
2. 1979– ______________
3. 1980– ______________
4. 1981– ______________
5. Comments: ______________________________

____

____

____

ASSIGNMENT SHEET #2

C. Net capital ratio

1. 1978– ______________________
2. 1979– ______________________
3. 1980– ______________________
4. 1981– ______________________
5. Comments: ____

____

____

____

D. Debt-to-equity ratio

1. 1978– ______________________
2. 1979– ______________________
3. 1980– ______________________
4. 1981– ______________________
5. Comments: ____

____

____

____

E. Percent equity

1. 1978– ______________________
2. 1979– ______________________
3. 1980– ______________________
4. 1981– ______________________
5. Comments: ____

____

____

____

ASSIGNMENT SHEET #2
NET WORTH SPREAD SHEET

LINE	NON-FARM ASSETS	1978	1979	1980	1981	19	19
1	Family Bank Balance	$	$	$	$	$	$
2	Savings						
3	Stocks and Bonds (present value)						
4	Accounts and Notes Receivable						
5	Life Insurance (cash value)						
6	TOTAL NON-FARM CURRENT ASSETS (add 1 thru 5)						
7	Auto and other Vehicles (family share)						
8	Household and Other						
9	Boat, Camper, Etc.						
10	Non-Farm Real Estate						
11	TOTAL NON-FARM ASSETS (add 6 thru 10)						
	FARM ASSETS						
12	Cash in Farm Account	$ 14,000	$ 16,606	$ 8,000	$ 20,500	$	$
13	Farm Accounts Receivable (forms 4.1 + 4.2)						
14	Swine, non-breeding (form 3.6 line 10)						
15	Beef, non-breeding (form 3.6 line 21)	11,300	25,000	7,300	17,753		
16	Dairy, non-breeding (form 3.6 line 33)						
17	Other, non-breeding (form 3.6 line 37)						
18	Purchased Feeds (form 3.7 line 5)						
19	Stored Crops (form 3.7 line 16)	28,660	43,500	21,750	45,000		
20	Growing Crops (form 3.7 line 19)						
21	Supplies (form 3.7 line 35)	1,000	4,500	600	5,700		
22	Other Current Assets (form 3.7 line 38)						
23	TOTAL FARM CURRENT ASSETS (add 12 thru 22)	54,960	89,606	37,650	88,953		
24	Swine, breeding (form 3.6 line 5)						
25	Beef, breeding (form 3.6 line 16)	19,990	21,210	15,000	25,000		
26	Dairy, breeding (form 3.6 line 28)						
27	Other, breeding (form 3.6 line 35)						
28	Farm Accounts Receivable (forms 4.1 + 4.2)						
29	Machinery and Equipment (form 3.2)	5,086	20,242	15,755	27,036		
30	TOTAL FARM INTERMEDIATE ASSETS (add 24 thru 29)	25,076	41,452	30,755	52,036		
31	Buildings (form 3.5)		4,778	5,500	6,700		
32	Land (form 3.5)	295,000	295,000	295,000	295,000		
33	TOTAL FARM LONG TERM ASSETS (add 31 + 32)	295,000	299,778	300,500	301,700		
34	TOTAL FARM ASSETS (add 23 + 30 + 33)	375,036	430,836	368,905	442,689		
35	TOTAL ASSETS (add 11 + 34)	375,036	430,836	368,905	442,689		
	FINANCIAL RATIOS						
A	CURRENT RATIO (FARM) $\frac{\text{Current Assets (form 6.3 line 23)}}{\text{Current Liabilities (form 6.4 line 58)}}$						
B	WORKING ASSET RATIO (FARM) $\frac{\text{Current + Intermediate Assets (form 6.3 lines 23 + 30)}}{\text{Current + Intermediate Liabilities (form 6.4 lines 58 + 62)}}$						
C	NET CAPITAL RATIO (FARM) $\frac{\text{Total Farm Assets (form 6.3 line 34)}}{\text{Total Farm Liabilities (form 6.4 line 67)}}$						
COLUMN		1	2	3	4	5	6

FBM II

ASSIGNMENT SHEET #2
NET WORTH SPREAD SHEET

LINE	NON-FARM LIABILITIES	1978	1979	1980	1981	19	19
36	Charge Accounts	$	$	$	$	$	$
37	Notes, portion due next year						
38	Mortgages, due next year						
39	Accrued Interest on non-farm liabilities						
40	TOTAL NON-FARM CURRENT LIABILITIES (add 36–39)						
41	Notes, portion due after next year						
42							
43	Mortgages, portion due after next year						
44							
45	TOTAL NON-FARM LIABILITIES (add 40 thru 44)						
46	NON-FARM NET WORTH (line 11 minus line 45)						
	FARM LIABILITIES						
47	Short Term Farm Notes Payable (form 4.4)	$	$	$	$	$	$
48							
49							
50	Accounts Payable (form 4.3)						
51							
52							
53	Credit Lines and Short Term Multipayt Notes (form 4.5)						
54	Intermed. & Long Term Notes Due Next Year (form 4.6)	18,800	19,200	25,000	17,000		
55							
56	Accrued Liabilities (taxes, rent, etc.) (form 4.3)						
57	Accrued Interest (form 4.3 thru 4.6)						
58	TOTAL FARM CURRENT LIABILITIES (add 47 thru 57)	18,800	19,200	25,000	17,000		
59	Intermed. Term Debt Due After Next Year (form 4.6)		13,734	17,000	13,527		
60							
61							
62	TOTAL FARM INTERMEDIATE LIABILITIES (add 59–61)	-0-	13,734	17,000	13,527		
63	Long Term Debt Due After Next Year (form 4.6)						
64	Other	93,000	90,000	90,000	93,000		
65							
66	TOTAL FARM LONG TERM LIABILITIES (add 63–65)	93,000	90,000	90,000	93,000		
67	TOTAL FARM LIABILITIES (add 58 + 62 + 66)	111,800	122,934	132,000	123,527		
68	TOTAL FARM NET WORTH (line 34 minus 67)	263,236	307,902	236,905	319,162		
69	TOTAL LIABILITIES (add 45 + 67)	111,800	122,934	132,000	123,527		
70	TOTAL NET WORTH (line 35 minus 69)	263,236	307,902	236,905	319,162		
	FINANCIAL RATIOS						
D	NET CAPITAL RATIO (FARM & NON-FARM) = Total Assets (form 6.3 line 35) / Total Liabilities (form 6.4 line 69)						
E	DEBT EQUITY RATIO = Total Liabilities (form 6.4 line 69) / Net Worth (form 6.4 line 70)						
F	PERCENT EQUITY = Net Worth (form 6.4 line 70) / Total Assets (form 6.3 line 35) X 100	%	%		%	%	
COLUMN		7	8	9	10	11	12

NET WORTH STATEMENTS
UNIT II

ANSWERS TO ASSIGNMENT SHEETS

Assignment Sheet #1–See next pages

ANSWERS TO ASSIGNMENT SHEET #1

FORM 6.3 DATE: NET WORTH STATEMENT: FARM AND NON-FARM ASSETS 19 81

LINE	NON-FARM ASSETS	BOOK VALUE			CURRENT VALUE		
		BEGINNING	ENDING	NETCHANGE (2-1)	BEGINNING	ENDING	NETCHANGE (5-4)
1	Family Bank Balance	$	$	$	$	$	$
2	Savings						
3	Stocks and Bonds (present value)						
4	Accounts and Notes Receivable						
5	Life Insurance (cash value)						
6	TOTAL NON-FARM CURRENT ASSETS (add 1 thru 5)						
7	Auto and other Vehicles (family share)						
8	Household and Other						
9	Boat, Camper, Etc.						
10	Non-Farm Real Estate						
11	TOTAL NON-FARM ASSETS (add 6 thru 10)						
	FARM ASSETS						
12	Cash in Farm Account	$ 8,000	$ 20,500	$ 12,500	$ 8,000	$ 20,500	$ 12,500
13	Farm Accounts Receivable (forms 4.1 + 4.2)						
14	Swine, non-breeding (form 3.6 line 10)						
15	Beef, non-breeding (form 3.6 line 21)	7,300	17,753	10,453	7,300	17,753	10,453
16	Dairy, non-breeding (form 3.6 line 33)						
17	Other, non-breeding (form 3.6 line 37)						
18	Purchased Feeds (form 3.7 line 5)						
19	Stored Crops (form 3.7 line 16)	21,750	45,000	23,250	21,750	45,000	23,250
20	Growing Crops (form 3.7 line 19)						
21	Supplies (form 3.7 line 35)						
22	Other Current Assets (form 3.7 line 38)	600	5,700	5,100	600	5,700	5,100
23	TOTAL FARM CURRENT ASSETS (add 12 thru 22)	37,650	88,953	51,303	37,650	88,953	51,303
24	Swine, breeding (form 3.6 line 5)						
25	Beef, breeding (form 3.6 line 16)	15,000	25,000	10,000	20,000	30,000	10,000
26	Dairy, breeding (form 3.6 line 28)						
27	Other, breeding (form 3.6 line 35)						
28	Farm Accounts Receivable (forms 4.1 + 4.2)						
29	Machinery and Equipment (form 3.2)	15,755	27,036	11,281	25,000	35,000	10,000
30	TOTAL FARM INTERMEDIATE ASSETS (add 24 thru 29)	30,755	52,036	21,281	45,000	65,000	20,000
31	Buildings (form 3.5)	5,500	6,700	1,200	10,000	12,000	2,000
32	Land (form 3.5)	295,000	295,000	-0-	600,000	600,000	-0-
33	TOTAL FARM LONG TERM ASSETS (add 31 + 32)	300,500	301,700	1,200	610,000	612,000	2,000
34	TOTAL FARM ASSETS (add 23 + 30 + 33)	368,905	442,689	73,784	692,650	765,953	73,303
35	TOTAL ASSETS (add 11 + 34)	368,905	442,689	73,784	692,650	765,953	73,303
	FINANCIAL RATIOS						
A	CURRENT RATIO (FARM) $\frac{\text{Current Assets (form 6.3 line 23)}}{\text{Current Liabilities (form 6.4 line 58)}}$	1.51:1	5.23:1	3.72:1	1.51:1	5.23:1	3.72:1
B	WORKING ASSET RATIO (FARM) $\frac{\text{Current + Intermediate Assets (form 6.3 lines 23 + 30)}}{\text{Current + Intermediate Liabilities (form 6.4 lines 58 + 62)}}$	1.63:1	4.62:1	2.99:1	1.97:1	5.04:1	3.07:1
C	NET CAPITAL RATIO (FARM) $\frac{\text{Total Farm Assets (form 6.3 line 34)}}{\text{Total Farm Liabilities (form 6.4 line 67)}}$	2.79:1	3.58:1	.79:1	5.25:1	6.20:1	.95:1
COLUMN		1	2	3	4	5	6

ANSWERS TO ASSIGNMENT SHEET #1

FORM 6.4 DATE: **NET WORTH STATEMENT: FARM AND NON-FARM LIABILITIES** 19 81

LINE	NON-FARM LIABILITIES	BOOK VALUE			CURRENT VALUE		
		BEGINNING	ENDING	NET CHANGE (8-7)	BEGINNING	ENDING	NET CHANGE (11-10)
36	Charge Accounts	$	$	$	$	$	$
37	Notes, portion due next year						
38	Mortgages, due next year						
39	Accrued Interest on non-farm liabilities						
40	TOTAL NON-FARM CURRENT LIABILITIES (add 36-39)						
41	Notes, portion due after next year						
42							
43	Mortgages, portion due after next year						
44							
45	TOTAL NON-FARM LIABILITIES (add 40 thru 44)						
46	NON-FARM NET WORTH (line 11 minus line 45)						
	FARM LIABILITIES						
47	Short Term Farm Notes Payable (form 4.4)	$	$	$	$	$	$
48							
49							
50	Accounts Payable (form 4.3)						
51							
52							
53	Credit Lines and Short Term Multipayt Notes (form 4.5)						
54	Intermed. & Long Term Notes Due Next Year (form 4.6)	25,000	17,000	< 8,000>	25,000	17,000	< 8,000>
55							
56	Accrued Liabilities (taxes, rent, etc.) (form 4.3)						
57	Accrued Interest (form 4.3 thru 4.6)						
58	TOTAL FARM CURRENT LIABILITIES (add 47 thru 57)	25,000	17,000	< 8,000>	25,000	17,000	<8,000>
59	Intermed. Term Debt Due After Next Year (form 4.6)	17,000	13,527	< 3,473>	17,000	13,527	<3,473>
60							
61							
62	TOTAL FARM INTERMEDIATE LIABILITIES (add 59-61)	17,000	13,527	< 3,473>	17,000	13,527	<3,473>
63	Long Term Debt Due After Next Year (form 4.6)	90,000	93,000	3,000	90,000	93,000	3,000
64							
65							
66	TOTAL FARM LONG TERM LIABILITIES (add 63-65)	90,000	93,000	3,000	90,000	93,000	3,000
67	TOTAL FARM LIABILITIES (add 58 + 62 + 66)	132,000	123,527	<8,473>	132,000	123,527	<8,473>
68	TOTAL FARM NET WORTH (line 34 minus 67)	236,905	319,162	82,257	560,650	642,426	81,776
69	TOTAL LIABILITIES (add 45 + 67)	132,000	123,527	<8,473>	132,000	123,527	<8,473>
70	TOTAL NET WORTH (line 35 minus 69)	236,905	319,162	82,257	560,650	642,426	81,776
	FINANCIAL RATIOS						
D	NET CAPITAL RATIO (FARM & NON-FARM) = Total Assets (form 6.3 line 35) / Total Liabilities (form 6.4 line 69)	2.79:1	3.58:1	.79:1	5.25:1	6.20:1	.95:1
E	DEBT EQUITY RATIO = Total Liabilities (form 6.4 line 69) / Net Worth (form 6.4 line 70)	.56	.39	<.17>	.24	.19	<.05>
F	PERCENT EQUITY = Net Worth (form 6.4 line 70) / Total Assets (form 6.3 line 35) X 100	64.2 %	72.0 %	7.8 %	80.9 %	83.8 %	2.9 %
COLUMN		7	8	9	10	11	12

Assignment Sheet #2

A. Current ratio

1. 1978-2.92
2. 1979-4.66
3. 1980-1.50
4. 1981-5.23
5. Comments should include:

   Current ratio is strong in every year, except 1980. It is still healthy in every other year. Poor yields or prices received in 1980 could affect this ratio, directly reducing current assets.

B. Working asset ratio

1. 1978-4.25
2. 1979-3.97
3. 1980-1.63
4. 1981-4.62
5. Comments should include:

   Working asset ratio measures intermediate term solvency and is in good shape for all years except 1980, but the ratio is still over 1. Some difficulty might have occurred in 1980 in trying to make machinery or equipment loans, but in the long run, a good solid ratio is evidenced.

C. Net capital ratio

1. 1978-3.35
2. 1979-3.50
3. 1980-2.79
4. 1981-3.58
5. Comments should include:

   Net capital ratio gives an indication of long-run solvency of the farm and should never drop below 2:1. If this business was forced to liquidate, it would be able to pay all creditors.

D. Debt-to-equity ratio

1. 1978–.42
2. 1979–.40
3. 1980–.56
4. 1981–.39
5. Comments should include:

   Debt-to-equity ratio is fluctuating but overall moving lower. This is a good indicator to lenders of the cooperator's ability to accept more debt.

E. Percent equity

1. 1978–70.18
2. 1979–71.46
3. 1980–64.21
4. 1981–72.09
5. Comments should include:

   Percent equity is in good shape, in 1981 only having 27.91 cents of debt obligation for every dollar of net worth or 72.09 cents equity for every dollar of asset.

NET WORTH STATEMENTS
UNIT II

TEST

NAME________________________________ SCORE ______________

1. Match terms associated with net worth statements to the correct definitions. Write the correct numbers in the blanks provided.

_____a. Value of assets not claimed by individuals or firms outside the farm business or the owner's claim on those assets

_____b. Firm's capacity to generate sufficient cash to meet its financial obligations as they fall due

_____c. Firm's ability to meet long-run claims against the business

_____d. Statement showing the financial condition at a definite point in time and listing all assets, values of assets, and liabilities of the farm

_____e. Current assets minus current liabilities

_____f. Assets used in or claimed by the business

_____g. Financial claims against the farm business

_____h. Relationship in quantity, amount, or size between two or more things

_____i. Items or resources controlled by the farm business

_____j. Form used for comparative analysis of net worth statements from several years

1. Solvency
2. Liquidity
3. Net worth
4. Net worth statement
5. Working capital
6. Inventory
7. Assets
8. Liabilities
9. Ratio
10. Spread sheet

2. State purposes of a net worth statement. Write your answer in the blanks below.

a. ____

b. ____

c. ____

d. ____

e. ____

3. Distinguish among assets according to time and convertibility. Write in the correct blanks a "C" for current assets, an "I" for intermediate assets, and an "L" for long-term assets.

______a. Are used in production and are considered permanent

______b. Have prices which are widely known

______c. Have well-established markets

______d. Are not legally or directly attached to the land

______e. Have prices which may not be widely known

______f. Have the least-established markets

______g. Are cash and other liquid assets which may be quickly converted into cash without any loss in value

______h. Are used up in more than one production period

______i. Are usually not easily converted to cash without some loss in value

______j. Are not readily converted to cash because they normally are not held for sale

______k. Have markets which are negotiated by individuals

______l. Are primarily used in the production process

4. Define liabilities according to time. Write your answer in the blanks provided.

a. Current liabilities-- ____

____

____

b. Intermediate liabilities-- ____________________________________

____

____

c. Long-term liabilities-- ______________________________________

____

____

5. State the mathematical formula for determining net worth. Write your answer in the space provided.

6. Select from the list below characteristics of current ratio. Mark each correct answer with an "X" in the blanks provided.

_____a. A rate of below 1:1 is satisfactory in all cases

_____b. Is probably used by more analysts than any other ratio

_____c. Is calculated as $\frac{\text{CURRENT ASSETS}}{\text{CURRENT LIABILITIES}}$

_____d. For agriculture, a ratio of 2:1 is considered a good indicator of the firm's ability to meet short-run obligations

_____e. Isn't very useful to most farm managers

_____f. Gives cooperator an idea of farm's ability to meet its short-run payment obligations

_____g. Is subjected by many analysts to qualitative tests for each business

_____h. A ratio of 1:1 is marginal; below 1:1 indicates potential liquidity problems

_____i. Is calculated as $\frac{\text{CURRENT LIABILITIES}}{\text{CURRENT ASSETS}}$

7. Select from the list below characteristics of working asset ratio. Mark each correct answer with an "X" in the blanks provided.

   _____a. Is used to determine farm solvency over an intermediate time span of one to 10 years

   _____b. A ratio of below 1:1 is considered a good indicator of the farm's ability to meet short-run obligations

   _____c. Is the ratio of current plus intermediate assets to current plus intermediate liabilities

   _____d. Is calculated as $\frac{\text{CURRENT + INTERMEDIATE ASSETS}}{\text{CURRENT + INTERMEDIATE LIABILITIES}}$

   _____e. Gives cooperators an idea of the farm's ability to meet its short-run obligations

   _____f. Provides valuable information on loan security and repayability; a good rule of thumb for agriculture is a rate of 3:1

   _____g. Is considered by many analysts to be more valuable than any other tool of ratio analysis

   _____h. Is calculated as $\frac{\text{CURRENT + INTERMEDIATE LIABILITIES}}{\text{CURRENT + INTERMEDIATE ASSETS}}$

8. Select from the list below characteristics of net capital ratio. Mark each correct answer with an "X" in the blanks provided.

   _____a. Lenders generally like to see a ratio of 2:1 which indicates the borrower has substantial risk-bearing ability

   _____b. Compares current farm assets to current farm liabilities

   _____c. Is used as an indication of the long-run solvency of the business

   _____d. Compares total farm assets to total farm liabilities

   _____e. Lenders are not really interested in this ratio

   _____f. A ratio of less than one indicates that a business is insolvent and could not cover all of its debts if forced to liquidate

   _____g. Is calculated as $\frac{\text{TOTAL FARM ASSETS}}{\text{TOTAL FARM LIABILITIES}}$

   _____h. Is calculated as $\frac{\text{CURRENT ASSETS}}{\text{CURRENT LIABILITIES}}$

   _____i. Interests lenders because it shows debt load in relation to total asset value of the farm

9. Select from the list below characteristics of debt-to-equity ratio. Mark each correct answer with an "X" in the blanks provided.

_____a. Many lenders prefer the borrower have at least as large of an investment in the farm as the lender

_____b. Maximum debt-to-equity ratios should be 2.0:1

_____c. Many lending institutions prefer low leverage ratios and interpret most movement in that direction as progress

_____d. Measures the firm's total financial obligations to creditors in relation to the capital provided by the cooperator

_____e. Is calculated as $\frac{\text{TOTAL LIABILITIES}}{\text{EQUITY (NET WORTH)}}$

_____f. Generally spekaing, maximum ratios should be 1.0:1

_____g. Measures the firm's current financial obligations to creditors

_____h. Higher ratios generate accelerated rates of growth when the rate of return on the investment is greater than the interest rate

_____i. Is calculated as $\frac{\text{EQUITY (NET WORTH)}}{\text{TOTAL LIABILITIES}}$

10. Select from the list below characteristics of percent equity ratio. Mark each correct response with an "X" in the blanks provided.

_____a. Lenders always loan on a percent equity ratio of below 50%

_____b. Is the ratio of net worth to total assets

_____c. Is calculated as $\frac{\text{NET WORTH}}{\text{TOTAL ASSETS}} \times 100$

_____d. Lenders prefer to loan on a percent equity above 50%

_____e. Is a measure of risk-bearing ability of the farm

_____f. Is the ratio of net worth to current assets

_____g. Is calculated as $\frac{\text{NET WORTH}}{\text{CURRENT ASSETS}} \times 50$

_____h. This ratio is the best measure of all ratios

11. Complete a net worth statement.
12. Use a spread sheet to analyze net worth.

(NOTE: If any of the above activities have not been done before the test, ask your instructor when they should be finished.)

NET WORTH STATEMENTS
UNIT II

ANSWERS TO TEST

1. a. 3
   b. 2
   c. 1
   d. 4
   e. 5
   f. 6
   g. 8
   h. 9
   i. 7
   j. 10

2. a. Measures present financial position
   b. Records growth in the farm business through changes in net worth
   c. Provides an indication of the amount of debt supported by various classes of assets
   d. Provides early warning through ratio analysis of problems that may arise in the short-run, intermediate, and long-run
   e. Reveals liquidity and solvency

3. a. L
   b. C
   c. C
   d. I
   e. I
   f. L
   g. C
   h. I
   i. I
   j. L
   k. I
   l. I

4. a. Claims falling due within one year
   b. Claims which are for more than one year but less than 10 years
   c. Claims exceeding 10 years in maturity

5. NET WORTH = TOTAL ASSETS - TOTAL LIABILITIES

6. b, c, d, f, g, h

7. a, c, d, f

8. a, c, d, f, g, i
9. a, c, d, e, f, h
10. b, c, d, e,
11. Evaluated to satisfaction of instructor
12. Evaluated to satisfaction of instructor

INCOME STATEMENTS
UNIT III

UNIT OBJECTIVE

After completion of this unit, the cooperator should be able to complete and interpret his or her own income statement. This knowledge will be evidenced through completion of assignment sheets and unit test with a minimum of 85 percent accuracy.

SPECIFIC OBJECTIVES

After completion of this unit, the cooperator should be able to:

1. Match terms associated with income statements to the correct definitions.
2. Name basic financial statements found in most record systems.
3. State purposes of the income statement.
4. Select from a list characteristics of net farm income.
5. Distinguish between basic accounting methods for determining net farm income.
6. Match basic sections of the income statement to the correct definitions.
7. Distinguish among types of income figures used in analyzing income.
8. Describe characteristics of a comparative income statement analysis sheet.
9. Complete an income statement.
10. Calculate trends in the farm business.

INCOME STATEMENTS
UNIT III

SUGGESTED ACTIVITIES

I. Suggested activities for instructor:

   A. Provide cooperators with objective sheet.

   B. Provide cooperators with information and assignment sheets.

   C. Introduce terms and definitions with a crossword puzzle or word hunt.

   D. Discuss unit and specific objectives.

   E. Discuss information and assignment sheets.

   F. Assist with completion of each cooperator's computerized whole farm and detailed enterprise analysis during on-farm visit.

   G. Assist with completion and interpretation of each cooperator's income statement during the on-farm visit.

   H. Assist with state and area comparative analysis by determining which cooperator's farms are ready for the analysis.

   I. Assist each cooperator in starting an income statement analysis sheet for long-range trends.

   J. Give test.

   K. Critique test.

   L. Reteach, if necessary.

II. Instructional materials:

   A. Objective sheet

   B. Information sheet

   C. Assignment sheets

      1. Assignment Sheet #1--Complete an Income Statement

      2. Assignment Sheet #2--Calculate Trends in the Farm Business

   D. Answers to assignment sheets

   E. Test

   F. Answers to test

III. Unit references:

A. Williams, Joseph E., and Roush, Clint E. *Financial Records: Farm Income Statement, Oklahoma State University Extension Facts, No. 711.* Stillwater: Oklahoma State University, 1978.

B. Schermerhorn, Richard W., and Page, R. E. *Financial Statement Analysis For Agri-Business Firms.* Stillwater: Oklahoma State University Extension, Circular E-812, n.d.

C. German, Lehi, and Denker, Robert. *Farm Business Analysis Instructor's Handbook.* Columbia, Missouri: Missouri Instructional Materials Laboratory, n.d.

D. Osburn, Donald D., and Schneeberger, Kenneth C. *Modern Agriculture Management.* Reston, Virginia: Prentice-Hall Company, 1978.

E. Hayenga, Wayne A. *What Should My Financial Report Tell Me?* College Station, Texas: Texas Agricultural Extension Service/Texas A & M University, L-1103, 1973.

F. Jacobs, Victor E. *Trouble-Shooting The Farm Business Record.* Paper discussed on the joint 40/50 year Anniversary Celebration Program of the Production Credit Associations and the Federal Intermediate Credit Banks, Champaign, Illinois, Sept. 20, 1973.

G. Nelson, Aaron G., and Murray, William G. *Agricultural Finance.* Ames, Iowa: Iowa State University Press, 1968.

H. Hopkins, John A., Barry, Peter J., and Baker, C. B. *Financial Management in Agriculture.* Danville, Illinois: The Interstate Printers and Publishers Inc., 1975.

I. Smith, Frank J., and Cooper, Ken. *The Financial Management of Agribusiness Firms.* Special Report 26, University of Minnesota Agricultural Extension Service, Department of Agricultural and Applied Economics in cooperation with the Extension Service of the U.S. Department of Agriculture, 1977.

INCOME STATEMENTS
UNIT III

INFORMATION SHEET

I. Terms and definitions

   A. Income statement--Financial record reflecting the farm business profitability over a specified period of time

      (NOTE: An income statement also may be known as an *operating statement* or a *profit and loss statement*.)

   B. Net worth statement--Summary of all assets and liabilities in the farm business at a specific point in time

   C. Cash flow statement--Listing of all cash inflows and outflows for the farm business over a specified period of time

   D. Receipts--Cash income flowing into the farm business

   E. Expenditures--Cash flowing out of the farm business

   F. Unpaid labor--Labor contributed by the operator and farm family to the operation of the farm business

   G. Net worth--Owner's share of the farm business

   H. Book value--Tax basis of assets or liabilities

   I. Current value--Market value of assets or liabilities

   J. Net farm income--Monetary value available for family living, income taxes, debt retirement, increased equity in the business, nonfarm investment or other savings

II. Basic financial statements found in most record systems

   A. Net worth statement

   B. Cash flow statement

   C. Income statement

III. Purposes of the income statement

   A. Measures profitability of the farm over a specific period of time

   B. Makes profit and loss sources easier to identify

   C. Shows disposition of net farm income

INFORMATION SHEET

IV. Characteristics of net farm income

- A. Measures return to unpaid labor
- B. Measures return to net worth
- C. Measures return to operator's management

V. Basic accounting methods for determining net farm income

- A. Cash method
  1. Receipts and expenses are reported during the period when cash or money actually exchanges hands
  2. True profits may be distorted between accounting periods
- B. Accrual method
  1. Receipts and expenses are reported during the period when actually earned or incurred
  2. Receipts and expenses are allocated to the correct accounting period through inventory adjustments

     (NOTE: Accrual method of determining net farm income should be used for business analysis and management purposes; however, cash method may be used for income tax purposes.)

VI. Basic sections of the income statement (Assignment Sheet #1)

- A. Receipts--Incoming cash from the sale of crops, raised non-breeding livestock sales, livestock bought for resale, capital sales, and miscellaneous receipts, which may include government payments, crop insurance, prize money, rental income from farm property, and interest from farm investments

  (NOTE: Capital sales include sales of machinery, equipment, breeding livestock, buildings, and land.)
- B. Expenditures--All expenses, fixed or variable, related to the operation of the business

  Examples: Operating expenditures; livestock bought for resale; breeding livestock; machinery and equipment; land; buildings and improvements

INFORMATION SHEET

C. Adjustments for accrued receipt and expense items--Accounts receivable and payable at the end of the accounting period

(NOTE: Accounts receivable represent the value of cash not yet received for sales made or for services provided during the accounting period. Other receivables might be farm rent or interest income that has accrued but has not been received. Accounts payable include accrued property tax, interest, and cash expenses and operating inputs purchased but not yet paid for.)

D. Inventory adjustments--Differences between value of assets at the beginning of the year and the value of assets at the end of the year

Examples: Livestock; feeds; crops and supplies; machinery and equipment; land and building improvements

E. Value of products used in the home--Cost value of farm products used for personal use

VII. Types of income figures used in analyzing income

A. Net cash income

1. Is the difference between cash receipts and cash expenses

2. Has limited use in analysis

3. Indicates amount of cash available to use for family living, retirement of debts, and off-farm investments

(NOTE: If net cash income is low, a less rapid build up of inventories or obtaining longer credit terms may help alleviate the problem.)

B. Net farm earnings

1. Is net cash income adjusted for accrued receipt and expense items

2. Is an approximation of income on the accrual basis

(NOTE: Net farm earning shows net earnings for all inputs bought and outputs sold during the year, even if payment or receipt is delayed until the following year.)

C. Net farm income

1. Is net farm earnings adjusted for changes in inventory and value of products used in the home

2. Is income accruing to the operator and family labor, net worth, and management

   (NOTE: Net farm income represents the true net income of the farm business.)

3. Measures the profitability of the farm business during an accounting period

VIII. Characteristics of a comparative income statement analysis sheet (Assignment Sheet #2)

A. Several income statements should be obtained for trend analysis

(NOTE: The income statement from one extremely profitable year can be highly misleading, as can the sole statement from a bad year.)

B. The trend of receipts and expenses, and net farm income over time is important in credit analysis

C. A closer look at the overall capital structure may be called for if capital investment charges are becoming increasingly large relative to farm receipts

Example: Analysis might point out that the business is becoming overly invested in fixed assets relative to the farm's capacity to generate sufficient revenue to pay for those assets

(NOTE: Data provided by the income statement looks at the farm business as a whole; thus, enterprise records are needed to supplement the statement.)

D. Comparing net farm income over time indicates the growth or decline in business profitability

INCOME STATEMENTS
UNIT III

ASSIGNMENT SHEET #1--COMPLETE AN INCOME STATEMENT

NAME________________________________ SCORE__________________________

How well has the farm business performed? Did it make a profit or loss? Recent income tax returns are unreliable indicators of how well a business is doing. Selling crops produced in a prior year, rapid depreciation, purchasing next year's feed or seed, and other conditions can substantially affect taxable income in any given year. As a result, taxable income may not adequately represent the earning power of the farm business.

The income statement provides information on how well the business actually did over a specified period of time. It is a useful analytical tool, particularly when statements from a number of years are available for comparative purposes.

Using the information given below and the forms on the following pages, complete an income statement for calendar year 1981.

RECEIPTS

Crop sales--$9,300.00
Miscellaneous receipts--$2,150.00
Raised non-breeding livestock sales--$20,195.00
Livestock purchased for resale sales--$35,995.00
Capital sales--$8,000.00

EXPENDITURES

Operating expenditures--$11,200.00
Livestock purchased for resale--$18,995.00
Breeding livestock--$8,000.00
Machinery and equipment--$35,000.00
Land, buildings, and improvements--$1,200.00

ADJUSTMENTS FOR ACCRUED RECEIPT AND EXPENSE ITEMS

Accounts receivable--$1,500.00
Accounts payable--$6,500.00

INVENTORY ADJUSTMENTS

Livestock--Beginning of year: $63,847.00; End of year: $66,222.00
Feed, crops, and supplies--Beginning of year: $2,347.00; End of year: $3,025.00
Machinery and equipment--$26,000.00 increase
Land, buildings, and improvement--$500.00 decrease

VALUE OF PRODUCTS USED IN THE HOME

Butchered steer for freezer--Estimated market value: $625.00

ASSIGNMENT SHEET #1

FORM 6.5 **FARM INCOME STATEMENT FOR 19____**

	RECEIPTS				
1	Crop Sales (form 6.2 add lines 1 thru 4)			$	
2	Miscellaneous Receipts (form 6.2, add lines 5 thru 12)				
3	Raised Non-Breeding Livestock Sales (form 6.2, line 14)				
4	Livestock Purchased for Resale Sales (form 6.2, line 16)				
5	Capital Sales (form 6.2, line B)				
A	TOTAL FARM RECEIPTS (add lines 1 thru 5)				$
	EXPENDITURES				
6	Operating Expenditures (form 6.2, line E)			$	
7	Livestock Purchased for Resale (form 6.2, line 45)				
	Breeding Livestock (form 6.2, line 46 and 47)				
9	Machinery and Equipment (form 6.2, line 48)				
10	Land, Buildings, and Improvements (form 6.2, line 49)				
B	TOTAL FARM EXPENDITURES (add lines 6 thru 10)				$
C	NET CASH INCOME (lines A minus B)				$
	ADJUSTMENTS FOR ACCRUED RECEIPT AND EXPENSE ITEMS				
11	Accounts Receivable[1] (form 6.3, line 13, col. 3)			$	
12	Accounts Payable[2] (form 6.4, add lines 50 thru 52, lines 56 thru 57, col. 3)				
D	TOTAL ACCRUED RECEIPT AND EXPENSE ITEMS (line 11 minus 12)				$
E	NET FARM EARNINGS (add lines C and D)				$
	INVENTORY ADJUSTMENTS	(1) BEGINNING	(2) ENDING	(3) NET CHANGE (2-1)	
13	Livestock (form 3.6, line 39)			$	
14	Feed, Crops and Supplies (form 3.7, line 38)				
15	Machinery and Equipment (form 6.3, line 29, col. 3 or 6)				
16	Land, Buildings and Improvements (form 6.3, line 33, col. 3 or 6)				
F	TOTAL INVENTORY ADJUSTMENTS (add lines 13 thru 16, col. 3)				$
17	Value of Products Used in the Home (form S-1 or estimate)				
G	NET FARM INCOME: RETURN TO UNPAID LABOR, NET WORTH AND MANAGEMENT (lines E + F + 17)				$

1 Include accounts for sale of livestock, livestock products, crops, supplies, machine work, etc. and prepaid expenses.
2 Include operating accounts for purchase of feed, chemicals, custom services, insurance, and other accounts such as interest, property, employment and fuel taxes.

ASSIGNMENT SHEET #1

FORM 6.5 **FARM INCOME STATEMENT FOR 19____**

	RECEIPTS				
1	Crop Sales (form 6.2 add lines 1 thru 4)			$	
2	Miscellaneous Receipts (form 6.2, add lines 5 thru 12)				
3	Raised Non-Breeding Livestock Sales (form 6.2, line 14)				
4	Livestock Purchased for Resale Sales (form 6.2, line 16)				
5	Capital Sales (form 6.2, line B)				
A	TOTAL FARM RECEIPTS (add lines 1 thru 5)				$
	EXPENDITURES				
6	Operating Expenditures (form 6.2, line E)			$	
7	Livestock Purchased for Resale (form 6.2, line 45)				
	Breeding Livestock (form 6.2, line 46 and 47)				
9	Machinery and Equipment (form 6.2, line 48)				
10	Land, Buildings, and Improvements (form 6.2, line 49)				
B	TOTAL FARM EXPENDITURES (add lines 6 thru 10)				$
C	NET CASH INCOME (lines A minus B)				$
	ADJUSTMENTS FOR ACCRUED RECEIPT AND EXPENSE ITEMS				
11	Accounts Receivable[1] (form 6.3, line 13, col. 3)			$	
12	Accounts Payable[2] (form 6.4, add lines 50 thru 52, lines 56 thru 57, col. 3)				
D	TOTAL ACCRUED RECEIPT AND EXPENSE ITEMS (line 11 minus 12)				$
E	NET FARM EARNINGS (add lines C and D)				$
	INVENTORY ADJUSTMENTS	(1) BEGINNING	(2) ENDING	(3) NET CHANGE (2-1)	
13	Livestock (form 3.6, line 39)			$	
14	Feed, Crops and Supplies (form 3.7, line 38)				
15	Machinery and Equipment (form 6.3, line 29, col. 3 or 6)				
16	Land, Buildings and Improvements (form 6.3, line 33, col. 3 or 6)				
F	TOTAL INVENTORY ADJUSTMENTS (add lines 13 thru 16, col. 3)				$
17	Value of Products Used in the Home (form S-1 or estimate)				
G	NET FARM INCOME: RETURN TO UNPAID LABOR, NET WORTH AND MANAGEMENT (lines E + F + 17)				$

1 Include accounts for sale of livestock, livestock products, crops, supplies, machine work, etc. and prepaid expenses.

2 Include operating accounts for purchase of feed, chemicals, custom services, insurance, and other accounts such as interest, property, employment and fuel taxes.

INCOME STATEMENTS
UNIT III

ASSIGNMENT SHEET #2--CALCULATE TRENDS IN THE FARM BUSINESS

NAME________________________________ SCORE________________

Net farm income measures profitability of a farm business during an accounting period. Comparing net farm income over time indicates the growth or decline in business profitability.

Using the information and forms on the following pages, calculate trends in the farm business. Be sure to complete both Parts I and II.

PART I: Analyze the following income statements from five consecutive years; then, complete the comparative income statement analysis sheet provided.

ASSIGNMENT SHEET #2

FORM 6.5

FARM INCOME STATEMENT FOR 19 77

	RECEIPTS				
1	Crop Sales (form 6.2 add lines 1 thru 4)			$ 5,280	
2	Miscellaneous Receipts (form 6.2, add lines 5 thru 12)			-0-	
3	Raised Non-Breeding Livestock Sales (form 6.2, line 14)			20,018	
4	Livestock Purchased for Resale Sales (form 6.2, line 16)			38,790	
5	Capital Sales (form 6.2, line B)			-0-	
A	TOTAL FARM RECEIPTS (add lines 1 thru 5)				$ 64,088
	EXPENDITURES				
6	Operating Expenditures (form 6.2, line E)			$ 8,966	
7	Livestock Purchased for Resale (form 6.2, line 45)			30,293	
8	Breeding Livestock (form 6.2, line 46 and 47)			-0-	
9	Machinery and Equipment (form 6.2, line 48)			4,787	
10	Land, Buildings, and Improvements (form 6.2, line 49)			2,354	
B	TOTAL FARM EXPENDITURES (add lines 6 thru 10)				$ 46,400
C	NET CASH INCOME (lines A minus B)				$ 17,688
	ADJUSTMENTS FOR ACCRUED RECEIPT AND EXPENSE ITEMS				
11	Accounts Receivable[1] (form 6.3, line 13, col. 3)			$ -0-	
12	Accounts Payable[2] (form 6.4, add lines 50 thru 52, lines 56 thru 57, col. 3)			2,400	
D	TOTAL ACCRUED RECEIPT AND EXPENSE ITEMS (line 11 minus 12)				$<2,400>
E	NET FARM EARNINGS (add lines C and D)				$ 15,288
	INVENTORY ADJUSTMENTS	(1) BEGINNING	(2) ENDING	(3) NET CHANGE (2-1)	
13	Livestock (form 3.6, line 39)	52,000	54,030	$ 2,030	
14	Feed, Crops and Supplies (form 3.7, line 38)	3,500	5,319	1,819	
15	Machinery and Equipment (form 6.3, line 29, col. 3 or 6)			4,080	
16	Land, Buildings and Improvements (form 6.3, line 33, col. 3 or 6)			<500>	
F	TOTAL INVENTORY ADJUSTMENTS (add lines 13 thru 16, col. 3)				$ 7,429
17	Value of Products Used in the Home (form S-1 or estimate)				-0-
G	NET FARM INCOME: RETURN TO UNPAID LABOR, NET WORTH AND MANAGEMENT (lines E + F + 17)				$ 22,717

[1] Include accounts for sale of livestock, livestock products, crops, supplies, machine work, etc. and prepaid expenses.
[2] Include operating accounts for purchase of feed, chemicals, custom services, insurance, and other accounts such as interest, property, employment and fuel taxes.

ASSIGNMENT SHEET #2

FORM 6.5 **FARM INCOME STATEMENT FOR 19 78**

	RECEIPTS				
1	Crop Sales (form 6.2 add lines 1 thru 4)			$ 4,175	
2	Miscellaneous Receipts (form 6.2, add lines 5 thru 12)			1,800	
3	Raised Non-Breeding Livestock Sales (form 6.2, line 14)			15,980	
4	Livestock Furchased for Resale Sales (form 6.2, line 16)			32,015	
5	Capital Sales (form 6.2, line B)			5,000	
A	TOTAL FARM RECEIPTS (add lines 1 thru 5)				$ 58,970
	EXPENDITURES				
6	Operating Expenditures (form 6.2, line E)			$ 8,966	
7	Livestock Purchased for Resale (form 6 2, line 45)			30,293	
8	Breeding Livestock (form 6.2, line 46 and 47)			-0-	
9	Machinery and Equipment (form 6.2, line 48)			4,787	
10	Land, Buildings, and Improvements (form 6.2, line 49)			2,354	
B	TOTAL FARM EXPENDITURES (add lines 6 thru 10)				$ 46,400
C	NET CASH INCOME (lines A minus B)				$ 12,570
	ADJUSTMENTS FOR ACCRUED RECEIPT AND EXPENSE ITEMS				
11	Accounts Receivable[1] (form 6.3, line 13, col. 3)			$ 1,500	
12	Accounts Payable[2] (form 6.4, add lines 50 thru 52, lines 56 thru 57, col. 3)			3,500	
D	TOTAL ACCRUED RECEIPT AND EXPENSE ITEMS (line 11 minus 12)				$ <2,000>
E	NET FARM EARNINGS (add lines C and D)				$ 10,570
	INVENTORY ADJUSTMENTS	(1) BEGINNING	(2) ENDING	(3) NET CHANGE (2-1)	
13	Livestock (form 3.6, line 39)	54,030	50,837	$ < 3,193 >	
14	Feed, Crops and Supplies (form 3.7, line 38)	5,319	422	< 4,897 >	
15	Machinery and Equipment (form 6.3, line 29, col. 3 or 6)			4,080	
16	Land, Buildings and Improvements (form 6.3, line 33, col. 3 or 6)			< 500 >	
F	TOTAL INVENTORY ADJUSTMENTS (add lines 13 thru 16, col. 3)				$ < 4,510 >
17	Value of Products Used in the Home (form S-1 or estimate)				625
G	NET FARM INCOME: RETURN TO UNPAID LABOR, NET WORTH AND MANAGEMENT (lines E + F + 17)				$ 6,685

[1] Include accounts for sale of livestock, livestock products, crops, supplies, machine work, etc. and prepaid expenses.

[2] Include operating accounts for purchase of feed, chemicals, custom services, insurance, and other accounts such as interest, property, employment and fuel taxes.

ASSIGNMENT SHEET #2

FORM 6.5

FARM INCOME STATEMENT FOR 1979

	RECEIPTS				
1	Crop Sales (form 6.2 add lines 1 thru 4)			$ 8,959	
2	Miscellaneous Receipts (form 6.2, add lines 5 thru 12)			2,200	
3	Raised Non-Breeding Livestock Sales (form 6.2, line 14)			5,918	
4	Livestock Purchased for Resale Sales (form 6.2, line 16)			36,017	
5	Capital Sales (form 6.2, line B)			-0-	
A	TOTAL FARM RECEIPTS (add lines 1 thru 5)				$ 53,094
	EXPENDITURES				
6	Operating Expenditures (form 6.2, line E)			$ 10,181	
7	Livestock Purchased for Resale (form 6.2, line 45)			25,943	
8	Breeding Livestock (form 6.2, line 46 and 47)			-0-	
9	Machinery and Equipment (form 6.2, line 48)			4,190	
10	Land, Buildings, and Improvements (form 6.2, line 49)			2,762	
B	TOTAL FARM EXPENDITURES (add lines 6 thru 10)				$ 43,076
C	NET CASH INCOME (lines A minus B)				$ 10,018
	ADJUSTMENTS FOR ACCRUED RECEIPT AND EXPENSE ITEMS				
11	Accounts Receivable[1] (form 6.3, line 13, col. 3)			$ 5,500	
12	Accounts Payable[2] (form 6.4, add lines 50 thru 52, lines 56 thru 57, col. 3)			2,500	
D	TOTAL ACCRUED RECEIPT AND EXPENSE ITEMS (line 11 minus 12)				$ 3,000
E	NET FARM EARNINGS (add lines C and D)				$ 13,018
	INVENTORY ADJUSTMENTS	(1) BEGINNING	(2) ENDING	(3) NET CHANGE (2-1)	
13	Livestock (form 3.6, line 39)	50,837	51,347	$ 510	
14	Feed, Crops and Supplies (form 3.7, line 38)	422	647	225	
15	Machinery and Equipment (form 6.3, line 29, col. 3 or 6)			3,200	
16	Land, Buildings and Improvements (form 6.3, line 33, col. 3 or 6)			-0-	
F	TOTAL INVENTORY ADJUSTMENTS (add lines 13 thru 16, col. 3)				$ 3,935
17	Value of Products Used in the Home (form S-1 or estimate)				1,115
G	NET FARM INCOME: RETURN TO UNPAID LABOR, NET WORTH AND MANAGEMENT (lines E + F + 17)				$ 18,068

[1] Include accounts for sale of livestock, livestock products, crops, supplies, machine work, etc. and prepaid expenses.

[2] Include operating accounts for purchase of feed, chemicals, custom services, insurance, and other accounts such as interest, property, employment and fuel taxes.

ASSIGNMENT SHEET #2

FORM 6.5

FARM INCOME STATEMENT FOR 19 80

	RECEIPTS				
1	Crop Sales (form 6.2 add lines 1 thru 4)			$ 8,500	
2	Miscellaneous Receipts (form 6.2, add lines 5 thru 12)			2,000	
3	Raised Non-Breeding Livestock Sales (form 6.2, line 14)			16,191	
4	Livestock Purchased for Resale Sales (form 6.2, line 16)			20,500	
5	Capital Sales (form 6.2, line B)			-0-	
A	TOTAL FARM RECEIPTS (add lines 1 thru 5)				$ 47,191
	EXPENDITURES				
6	Operating Expenditures (form 6.2, line E)			$ 8,275	
7	Livestock Purchased for Resale (form 6.2, line 45)			24,863	
8	Breeding Livestock (form 6.2, line 46 and 47)			-0-	
9	Machinery and Equipment (form 6.2, line 48)			3,100	
10	Land, Buildings, and Improvements (form 6.2, line 49)			943	
B	TOTAL FARM EXPENDITURES (add lines 6 thru 10)				$ 37,181
C	NET CASH INCOME (lines A minus B)				$ 10,010
	ADJUSTMENTS FOR ACCRUED RECEIPT AND EXPENSE ITEMS				
11	Accounts Receivable[1] (form 6.3, line 13, col. 3)			$ 2,500	
12	Accounts Payable[2] (form 6.4, add lines 50 thru 52, lines 56 thru 57, col. 3)			7,500	
D	TOTAL ACCRUED RECEIPT AND EXPENSE ITEMS (line 11 minus 12)				$ < 5,000>
E	NET FARM EARNINGS (add lines C and D)				$ 5,010
	INVENTORY ADJUSTMENTS	(1) BEGINNING	(2) ENDING	(3) NET CHANGE (2-1)	
13	Livestock (form 3.6, line 39)	51,347	63,847	$ 12,500	
14	Feed, Crops and Supplies (form 3.7, line 38)	647	2,347	1,700	
15	Machinery and Equipment (form 6.3, line 29, col. 3 or 6)			< 895>	
16	Land, Buildings and Improvements (form 6.3, line 33, col. 3 or 6)			< 45>	
F	TOTAL INVENTORY ADJUSTMENTS (add lines 13 thru 16, col. 3)				$ 13,260
17	Value of Products Used in the Home (form S-1 or estimate)				625
G	NET FARM INCOME: RETURN TO UNPAID LABOR, NET WORTH AND MANAGEMENT (lines E + F + 17)				$ 18,895

1 Include accounts for sale of livestock, livestock products, crops, supplies, machine work, etc. and prepaid expenses.

2 Include operating accounts for purchase of feed, chemicals, custom services, insurance, and other accounts such as interest, property, employment and fuel taxes.

ASSIGNMENT SHEET #2

FORM 6.5

FARM INCOME STATEMENT FOR 19 81

	RECEIPTS				
1	Crop Sales (form 6.2 add lines 1 thru 4)			$ 9,300	
2	Miscellaneous Receipts (form 6.2, add lines 5 thru 12)			2,150	
3	Raised Non-Breeding Livestock Sales (form 6.2, line 14)			20,195	
4	Livestock Purchased for Resale Sales (form 6.2, line 16)			35,995	
5	Capital Sales (form 6.2, line B)			8,000	
A	TOTAL FARM RECEIPTS (add lines 1 thru 5)				$ 75,640
	EXPENDITURES				
6	Operating Expenditures (form 6.2, line E)			$ 11,200	
7	Livestock Purchased for Resale (form 6.2, line 45)			18,995	
8	Breeding Livestock (form 6.2, line 46 and 47)			8,000	
9	Machinery and Equipment (form 6.2, line 48)			35,000	
10	Land, Buildings, and Improvements (form 6.2, line 49)			1,200	
B	TOTAL FARM EXPENDITURES (add lines 6 thru 10)				$ 74,395
C	NET CASH INCOME (lines A minus B)				$ 1,245
	ADJUSTMENTS FOR ACCRUED RECEIPT AND EXPENSE ITEMS				
11	Accounts Receivable[1] (form 6.3, line 13, col. 3)			$ 1,500	
12	Accounts Payable[2] (form 6.4, add lines 50 thru 52, lines 56 thru 57, col. 3)			6,500	
D	TOTAL ACCRUED RECEIPT AND EXPENSE ITEMS (line 11 minus 12)				$ <5,000>
E	NET FARM EARNINGS (add lines C and D)				$ <3,755>
	INVENTORY ADJUSTMENTS	(1) BEGINNING	(2) ENDING	(3) NET CHANGE (2-1)	
13	Livestock (form 3.6, line 39)	63,847	66,222	$ 2,375	
14	Feed, Crops and Supplies (form 3.7, line 38)	2,347	3,025	678	
15	Machinery and Equipment (form 6.3, line 29, col. 3 or 6)			26,000	
16	Land, Buildings and Improvements (form 6.3, line 33, col. 3 or 6)			<500>	
F	TOTAL INVENTORY ADJUSTMENTS (add lines 13 thru 16, col. 3)				$ 28,553
17	Value of Products Used in the Home (form S-1 or estimate)				625
G	NET FARM INCOME: RETURN TO UNPAID LABOR, NET WORTH AND MANAGEMENT (lines E + F + 17)				$ 25,423

[1] Include accounts for sale of livestock, livestock products, crops, supplies, machine work, etc. and prepaid expenses.

[2] Include operating accounts for purchase of feed, chemicals, custom services, insurance, and other accounts such as interest, property, employment and fuel taxes.

3

ASSIGNMENT SHEET #2

COMPARATIVE INCOME STATEMENT ANALYSIS SHEET

Line from Income Statement	19____	19____	Net Change from Previous Year (2-1)	19____	Net Change from Previous Year (4-2)	19____	Net Change from Previous Year (6-4)	19____	Net Change from Previous Year (8-6)
TOTAL FARM RECEIPTS	$	$	$	$	$	$	$	$	$
TOTAL FARM EXPENDITURES	$	$	$	$	$	$	$	$	$
NET CASH INCOME	$	$	$	$	$	$	$	$	$
TOTAL ACCRUED RECEIPT AND EXPENSE ITEMS	$	$	$	$	$	$	$	$	$
NET FARM EARNINGS	$	$	$	$	$	$	$	$	$
TOTAL INVENTORY ADJUSTMENTS	$	$	$	$	$	$	$	$	$
NET FARM INCOME: RETURN TO UNPAID LABOR, NET WORTH, AND MANAGEMENT	$	$	$	$	$	$	$	$	$
Column	1	2	3	4	5	6	7	8	9

ASSIGNMENT SHEET #2

COMPARATIVE INCOME STATEMENT ANALYSIS SHEET

Line from Income Statement	19___	19___	Net Change from Previous Year (2-1)	19___	Net Change from Previous Year (4-2)	19___	Net Change from Previous Year (6-4)	19___	Net Change from Previous Year (8-6)
TOTAL FARM RECEIPTS	$	$	$	$	$	$	$	$	$
TOTAL FARM EXPENDITURES	$	$	$	$	$	$	$	$	$
NET CASH INCOME	$	$	$	$	$	$	$	$	$
TOTAL ACCRUED RECEIPT AND EXPENSE ITEMS	$	$	$	$	$	$	$	$	$
NET FARM EARNINGS	$	$	$	$	$	$	$	$	$
TOTAL INVENTORY ADJUSTMENTS	$	$	$	$	$	$	$	$	$
NET FARM INCOME: RETURN TO UNPAID LABOR, NET WORTH, AND MANAGEMENT	$	$	$	$	$	$	$	$	$
Column	1	2	3	4	5	6	7	8	9

ASSIGNMENT SHEET #2

PART II: Complete the sentences about trends you found in the farm business. Mark an "X" in the blank which most correctly describes that trend; then in the space provided, comment on that trend.

A. Total farm receipts

1. The long-range trend is __________ increasing.
   __________ decreasing.
2. Comments: ______________________________
   ____
   ____
   ____

B. Total farm expenditures

1. The long-range trend is __________ increasing.
   __________ decreasing.
2. Comments: ______________________________
   ____
   ____
   ____

C. Net cash income

1. The long-range trend is __________ increasing.
   __________ decreasing.
2. Comments: ______________________________
   ____
   ____
   ____

ASSIGNMENT SHEET #2

D. Total accrued receipt and expense items

1. The long-range trend is ____________________ increasing.

   ____________________ decreasing.

2. Comments: ____

   ____

   ____

   ____

E. Net farm earnings

1. The long-range trend is ____________________ increasing.

   ____________________ decreasing.

2. Comments: ____

   ____

   ____

   ____

F. Total inventory adjustment

1. The long-range trend is ____________________ increasing.

   ____________________ decreasing.

2. Comments: ____

   ____

   ____

   ____

G. Net farm income

1. The long-range trend is ____________________ increasing.

   ____________________ decreasing.

2. Comments: ____

   ____

   ____

   ____

INCOME STATEMENTS
UNIT III

ANSWERS TO ASSIGNMENT SHEETS

Assignment Sheet #1--See income statement on following page

Answers to Assignment Sheet #1

FORM 6.5 **FARM INCOME STATEMENT FOR 19 81**

	RECEIPTS				
1	Crop Sales (form 6.2 add lines 1 thru 4)			$ 9,300	
2	Miscellaneous Receipts (form 6.2, add lines 5 thru 12)			2,150	
3	Raised Non-Breeding Livestock Sales (form 6.2, line 14)			20,195	
4	Livestock Purchased for Resale Sales (form 6.2, line 16)			35,995	
5	Capital Sales (form 6.2, line B)			8,000	
A	TOTAL FARM RECEIPTS (add lines 1 thru 5)				$ 75,640
	EXPENDITURES				
6	Operating Expenditures (form 6.2, line E)			$ 11,200	
7	Livestock Purchased for Resale (form 6.2, line 45)			18,995	
8	Breeding Livestock (form 6.2; line 46 and 47)			8,000	
9	Machinery and Equipment (form 6.2, line 48)			35,000	
10	Land, Buildings, and Improvements (form 6.2, line 49)			1,200	
B	TOTAL FARM EXPENDITURES (add lines 6 thru 10)				$ 74,395
C	NET CASH INCOME (lines A minus B)				$ 1,245
	ADJUSTMENTS FOR ACCRUED RECEIPT AND EXPENSE ITEMS				
11	Accounts Receivable[1] (form 6.3, line 13, col. 3)			$ 1,500	
12	Accounts Payable[2] (form 6.4, add lines 50 thru 52, lines 56 thru 57, col. 3)			6,500	
D	TOTAL ACCRUED RECEIPT AND EXPENSE ITEMS (line 11 minus 12)				$ <5,000>
E	NET FARM EARNINGS (add lines C and D)				$ < 3,755>
	INVENTORY ADJUSTMENTS	(1) BEGINNING	(2) ENDING	(3) NET CHANGE (2-1)	
13	Livestock (form 3.6, line 39)	63,847	66,222	$ 2,375	
14	Feed, Crops and Supplies (form 3.7, line 38)	2,347	3,025	678	
15	Machinery and Equipment (form 6.3, line 29, col. 3 or 6)			26,000	
16	Land, Buildings and Improvements (form 6.3, line 33, col. 3 or 6)			<500>	
F	TOTAL INVENTORY ADJUSTMENTS (add lines 13 thru 16, col. 3)				$ 28,553
17	Value of Products Used in the Home (form S-1 or estimate)				625
G	NET FARM INCOME: RETURN TO UNPAID LABOR, NET WORTH AND MANAGEMENT (lines E + F + 17)				$ 25,423

[1] Include accounts for sale of livestock, livestock products, crops, supplies, machine work, etc. and prepaid expenses.

[2] Include operating accounts for purchase of feed, chemicals, custom services, insurance, and other accounts such as interest, property, employment and fuel taxes.

Assignment Sheet #2

PART I--See the comparative income statement analysis sheet and the following pages

PART II

A. Total farm receipts

1. Decreasing
2. Comment should include: 1981 was an exception, this increase was apparently an increase in capital sale and not operating sale

B. Total farm expenditures

1. Decreasing

   (NOTE: Total farm expenditures were decreasing but not as fast as total farm receipts.)

2. Comment should include: 1981 increase in expenditures was apparently an increase in captial purchases

C. Net cash income

1. Decreasing
2. Comment should include: Net cash income indicates a probable cash flow problem; it would be helpful to see the farm's net worth and cash flow statements

D. Total accrued receipt and expense items

1. Increasing
2. Comment should include: Is difficult to determine, but four out of five years accounts payable exceeded accounts receivable

E. Net farm earnings

1. Decreasing
2. Comment should include: Apparent cause appears to be caused by a decrease in net cash income and an increase in accounts payable

F. Total inventory adjustment

1. Increasing
2. Comment should include: Increase four out of five years; large inventory increase in 1980 cattle inventory; indicators point to a higher than normal cattle inventory

G. Net farm income

1. Increasing
2. Comment should include: Farm profitability is increasing primarily because of increases in inventory; accrual method shows incomes and expenses allocated through inventory adjustments; net farm income is one of the best overall long-range efficiency measures

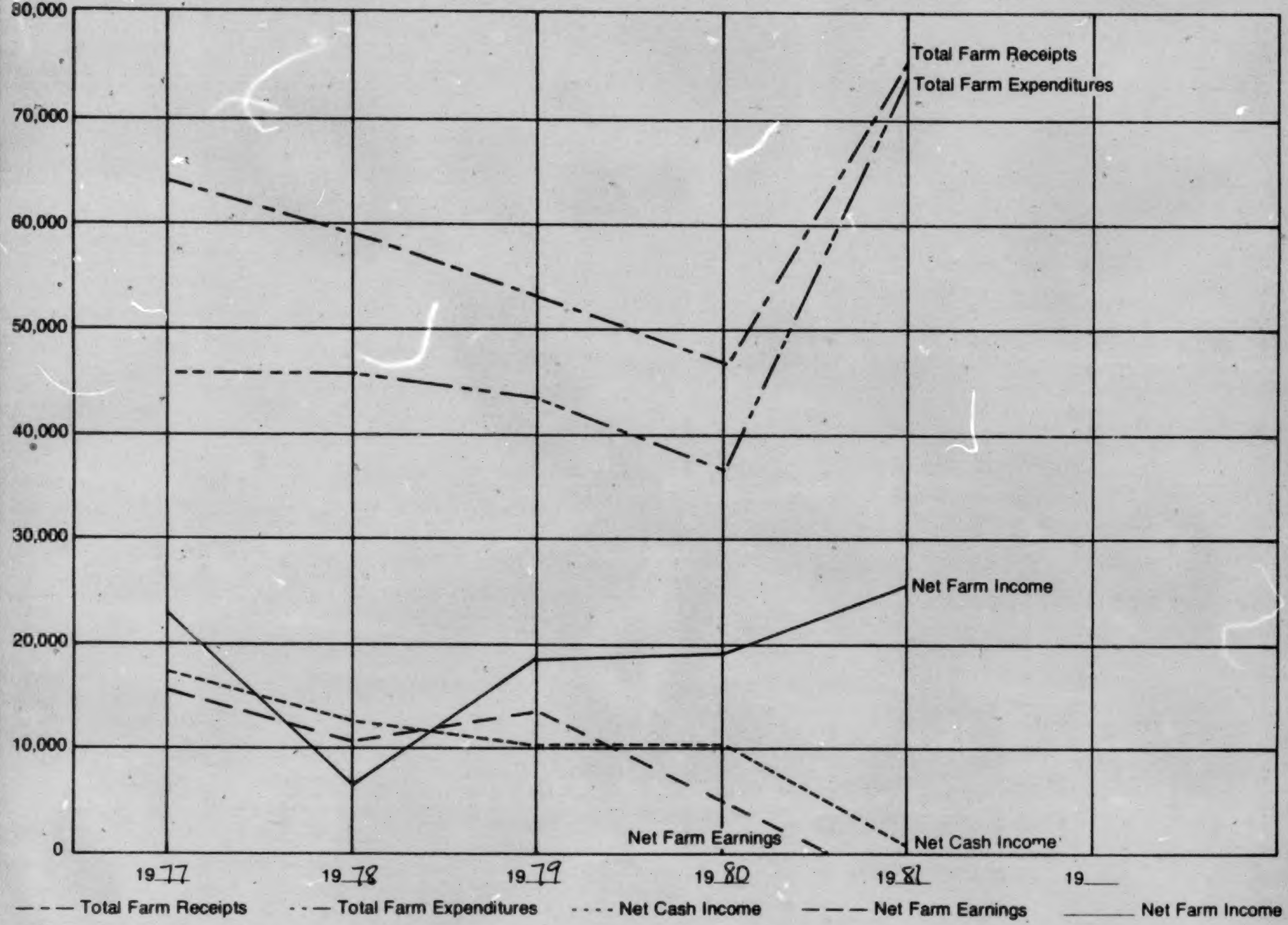
Answers to Assignment Sheet #2

COMPARATIVE INCOME STATEMENT ANALYSIS SHEET

Line from Income Statement	1977	1978	Net Change from Previous Year (2-1)	1979	Net Change from Previous Year (4-2)	1980	Net Change from Previous Year (6-4)	1981	Net Change from Previous Year (8-6)
TOTAL FARM RECEIPTS	$ 64,088	$ 58,970	$ <5,118>	$ 53,094	$ <5,876>	$ 47,191	$ <5,903>	$ 75,640	$ 28,449
TOTAL FARM EXPENDITURES	$ 46,400	$ 46,400	$ -0-	$ 43,076	$ <3,324>	$ 37,181	$ <5,895>	$ 74,395	$ 37,214
NET CASH INCOME	$ 17,688	$ 12,570	$ <5,118>	$ 10,018	$ <2,552>	$ 10,010	$ <8>	$ 1,245	$ <8,765>
TOTAL ACCRUED RECEIPT AND EXPENSE ITEMS	$ <2,400>	$ <2,000>	$ 400	$ 3,000	$ 5,000	$ <5,000>	$ <8,000>	$ <5,000>	$ -0-
NET FARM EARNINGS	$ 15,288	$ 10,570	$ <4,718>	$ 13,018	$ 2,448	$ 5,010	$ <8,008>	$ <3,755>	$ <8,765>
TOTAL INVENTORY ADJUSTMENTS	$ 7,429	$ <4,510>	$ <11,939>	$ 3,935	$ 8,445	$ 13,260	$ 9,325	$ 28,553	$ 15,293
NET FARM INCOME: RETURN TO UNPAID LABOR, NET WORTH, AND MANAGEMENT	$ 22,717	$ 6,685	$ <16,032>	$ 18,068	$ 11,383	$ 18,895	$ 827	$ 25,423	$ 6,528
Column	1	2	3	4	5	6	7	8	9

Answers to Assignment Sheet #2

(NOTE: The following graph is an additional aid for the instructor and is *not* a part of the student's answer.)



INCOME STATEMENTS
UNIT III

TEST

NAME________________________________ SCORE____________________

1. Match terms associated with income statements to the correct definitions. Write the correct numbers in the blanks provided.

_____a. Cash income flowing into the farm business

_____b. Financial record reflecting the farm business profitability over a specified period of time

_____c. Cash flowing out of the farm business

_____d. Summary of all assets and liabilities in the farm business at a specific point in time

_____e. Tax basis of assets or liabilities

_____f. Listing of all cash inflows and outflows for the farm business over a specified period of time

_____g. Market value of assets or liabilities

_____h. Labor contributed by the operator and farm family to the operation of the farm business

_____i. Owner's share of the farm business

_____j. Monetary value available for family living, income taxes, debt retirement, increased equity in the business, nonfarm investment or other savings

1. Current value
2. Expenditures
3. Net worth statement
4. Unpaid labor
5. Receipts
6. Cash flow statement
7. Book value
8. Net worth
9. Income statement
10. Net farm income

2. Name basic financial statements found in most record systems. Write your answer in the blanks provided.

a. ____

b. ____

c. ____

3. State purposes of the income statement. Write your answer in the blanks provided.

   a. ____

   b. ____

   c. ____

4. Select from the list below characteristics of net farm income. Mark each correct answer with an "X" in the blanks provided.

   ______a. Measures return to unpaid labor

   ______b Measures the difference between cash receipts and cash expenses

   ______c. Measures return to net worth

   ______d. Measures return to operator's management

   ______e. Has unlimited use in analysis

5. Distinguish between basic accounting methods for determining net farm income. Write in the correct blanks an "A" for the accrual method and a "C" for the cash method.

   ______a. True profits may be distorted between accounting periods

   ______b. Receipts and expenses are reported during the period when actually earned or incurred

   ______c. Receipts and expenses are allocated to the correct accounting period through inventory adjustments

   ______d. Receipts and expenses are reported during the period when cash or money actually exchanges hands

6. Match basic sections of the income statement to the correct definitions. Write the correct numbers in the blanks provided.

   ______a. All expenses, fixed or variable, related to the operation of the business

   ______b. Incoming cash from the sale of crops, raised non-breeding livestock sales, livestock bought for resale, capital sales, and miscellaneous receipts, which may include government payments, crop insurance, prize money, rental income from farm property, and interest from farm investments

   ______c. Accounts receivable and payable at the end of the accounting period

   ______d. Differences between the value of assets at the beginning of the year and the value of assets at the end of the year

   1. Receipts
   2. Inventory adjustments
   3. Expenditures
   4. Adjustments for accrued receipt and expense items
   5. Value of products used in the home

_____e. Cost value of farm products used for personal use

7. Distinguish among types of income figures used in analyzing income. Write in the correct blanks a "N" for net cash income, an "E" for net farm earnings, and a "I" for net farm income.

_____a. Is the difference between cash receipts and cash expenses

_____b. Is net cash income adjusted for accrued receipt and expense items

_____c. Is net farm earnings adjusted for changes in inventory and value of products used in the home

_____d. Is income accruing to the operator and family labor, net worth, and management

_____e. Measures the profitability of the farm business during an accounting period

_____f. Is an approximation of income on the accrual basis

_____g. Has limited use in analysis

_____h. Indicates amount of cash available to use for family living, retirement of debts, and off-farm investments

8. Describe characteristics of a comparative income statement analysis sheet. Write your answer in the space provided.

9. Complete an income statement.

10. Calculate trends in the farm business.

(NOTE: If nine and ten have not been done before the test, ask the instructor when they should be finished.)

INCOME STATEMENTS
UNIT III

ANSWERS TO TEST

1. a. 5
   b. 9
   c. 2
   d. 3
   e. 7
   f. 6
   g. 1
   h. 4
   i. 8
   j. 10
2. a. Net worth statement
   b. Cash flow statement
   c. Income statement
3. a. Measures profitability of the farm over a specific period of time
   b. Makes profit and loss sources easier to identify
   c. Shows disposition of net farm income
4. a, c, d
5. a. C
   b. A
   c. A
   d. C
6. a. 3
   b. 1
   c. 4
   d. 2
   e. 5
7. a. N
   b. E
   c. I
   d. I
   e. I
   f. E
   g. N
   h. N

8. Answer should include:
    a. Several income statements should be obtained for trend analysis
    b. The trend of receipts and expenses, and net farm income over time is important in credit analysis
    c. A closer look at the overall capital structure may be called for if capital investment charges are becoming increasingly large relative to farm receipts
    d. Comparing net farm income over time indicates the growth or decline in business profitability
9. Evaluated to satisfaction of instructor
10. Evaluated to satisfaction of instructor

WHOLE FARM AND DETAILED ENTERPRISE ANALYSIS
UNIT IV

UNIT OBJECTIVE

After completion of this unit, the cooperator should be able to analyze and interpret the performance of the farm business for the preceding year. This knowledge will be evidenced through completion of assignment sheets and unit test with a minimum of 85 percent accuracy.

SPECIFIC OBJECTIVES

After completion of this unit, the cooperator should be able to:

1. Match terms associated with whole farm and detailed enterprise analysis to the correct definitions.
2. State purposes of whole farm analysis.
3. Describe resource information needed to complete whole farm analysis.
4. Match the returns to resources to the correct descriptions.
5. Select from a list measures of performance useful in interpreting whole farm analysis.
6. Match common ways to measure farm business size to the correct descriptions.
7. Discuss ratio of capital investment per man-year.
8. Match measures of income performance to the correct descriptions.
9. Match efficiency ratios for the farm to the correct descriptions.
10. Distinguish among types of comparison standards from different information sources.
11. Arrange in order steps in outlining a whole farm analysis.
12. Distinguish between the advantages and disadvantages of a computerized analysis.
13. State purposes of detailed enterprise analysis.
14. Discuss allocation of overhead enterprise.
15. Match measures of enterprise size and volume to the correct descriptions.
16. State methods of increasing volume of business.

17. Match measures of enterprise earnings to the correct descriptions.

18. Select from a list measures of crop efficiency.

19. State methods of increasing crop returns.

20. Select from a list measures of livestock earnings efficiency.

21. Select from a list measures of livestock production efficiency.

22. Select from a list measures of performance between investment and income.

23. Complete an *Oklahoma Young Farmer Record Book* whole farm business analysis form.

24. Complete an *Oklahoma Young Farmer Record Book* measures of performance form.

25. Complete a step-by-step outline of your whole farm analysis.

26. Compile the information needed for a whole farm computer analysis.

27. Complete a livestock and crop enterprise analysis.

WHOLE FARM AND DETAILED ENTERPRISE ANALYSIS
UNIT IV

SUGGESTED ACTIVITIES

I. Suggested activities for instructor:

(NOTE: This unit should be taught in two or more class periods.)

- A. Provide cooperators with objective sheet.
- B. Provide cooperators with information and assignment sheets.
- C. Discuss unit and specific objectives.
- D. Discuss information and assignment sheets.
- E. Invite resource persons to participate in class discussion.

  Examples: Former cooperator; Oklahoma State University Extension farm management specialists

- F. Obtain a printout of *Oklahoma State University Costfinder* whole farm analysis.
- G. Obtain information on regional summary farm data, including whole farm and enterprise averages.
- H. Obtain information on state summary farm data.
- I. Assist cooperator during the on-the-farm visit with completing the *Oklahoma Young Farmer Record Book* whole farm analysis and measure of performance forms. Review cooperator's whole farm and detailed enterprise analysis and compare with summary analysis and cooperator's farm business and family goals.
- J. If not previously completed, send cooperator's form for a computer analysis to Oklahoma State University, Dept. of Ag. Economics, 513 Ag. Hall, Stillwater, OK, 74078. Upon return of completed analysis, assist cooperator with interpreting the results.
- K. Give test.
- L. Critique test.
- M. Reteach, if necessary.

II. Instructional materials:

- A. Objective sheet
- B. Information sheet

C. Assignment sheets

1. Assignment Sheet #1--Complete an *Oklahoma Young Farmer Record Book* Whole Farm Business Analysis Form
2. Assignment Sheet #2--Complete an *Oklahoma Young Farmer Record Book* Measures of Performance Form
3. Assignment Sheet #3--Complete a Step-by-Step Outline of Your Whole Farm Analysis
4. Assignment Sheet #4--Compile the Information Needed for a Whole Farm Computer Analysis
5. Assignment Sheet #5--Complete a Livestock and Crop Enterprise Analysis

D. Answers to assignment sheets

E. Test

F. Answers to test

III. Unit references:

A. James, Sydney C., and Stoneberg, Everett. 2nd ed., *Farm Accounting Business Analysis.* Ames, Iowa: Iowa State University Press, 1979.

B. Osburn, Donald D. and Schneeberger, Kenneth C. *Modern Agriculture Management*. Reston, Virginia: Reston Publishing Company, Inc., 1978.

C. Hardin, Mike L. and Nelson, Ted T. *Costfinder User's Manual.* Stillwater: Oklahoma State University Department of Agricultural Economics Extension Farm Management, n.d.

D. *Oklahoma Young Farmer Record Book.* Stillwater: Oklahoma State Department of Vocational and Technical Education/Curriculum and Instructional Materials Center, and Oklahoma State University Department of Agricultural Economics, rev. 1/1/81.

E. *Farm Business Analysis Instructor's Handbook.* Columbia, Missouri: University of Missouri, 1976.

F. Williams, Joseph E., and Casey, James E. Farm and Ranch Management I Notes, Agricultural Economics 3413. Stillwater: Oklahoma State University Department of Agricultural Economics, 1978.

G. Walker, Odell L. Advanced Farm Management Notes, Agricultural Economics 4403. Stillwater: Oklahoma State University Department of Agricultural Economics, 1977.

H. James, Sydeny C., and Trede, Larry. *Midwest Farm Account Book.* Ames, Iowa: Department of Economics, Iowa State University of Science and Technology, 1970.

I. Herbst, J.H. *Farm Management--Principles, Budgets, and Plans.* Champaign, Illinois: Stipes Publishing Company, 1976.

J. Schluckebier, Lynn. *Annual Nebraskaland Farm and Ranch Business Management Education Program Report.* Lincoln, Nebraska: Adele Publishing Company, 1977.

K. Painter, Charles W. *Using Farm Analysis Information.* Austin, Minnesota: Austin Area Vocational Technical School, 1966.

L. Oklahoma Crop and Livestock Reporting Service. *Oklahoma Agricultural Statistics 1977.* Oklahoma City, Oklahoma: Oklahoma Department of Agriculture, 1977.

WHOLE FARM AND DETAILED ENTERPRISE ANALYSIS
UNIT IV

INFORMATION SHEET

I. Terms and definitions

- A. Man-year--Average amount of work a person can perform in an average work year using average technology

  (NOTE: The standard used is 2,000 hours per year.)

- B. Net worth statement--Statement showing the financial condition of the farm business at a definite point in time
- C. Income statement--Summary of cash and non-cash receipts and expenses during a specified period of time
- D. Average farm assets--Assets determined from net worth statement by adding beginning farm assets to ending farm assets and dividing by two
- E. Cash flow summary--Written historical record of cash flow showing actual cash income and expenses for a definite period of time
- F. Average net worth--Equity determined from net worth statement by adding beginning net worth to the ending net worth and dividing by two
- G. Book value--Tax or cost basis of assets and liabilities, including adjustments and prior depreciation taken
- H. Current value--Cash value of assets based on actual cost or market value less sale expenses
- I. Fixed costs--Costs which do not vary with changes in output

  Examples: Land payment; depreciation on machinery, equipment and buildings; machinery payment

- J. Variable costs--Costs which change with the level of output

  Examples: Feed; seed; fertilizer; fuel; veterinary medicine

- K. Total costs--Sum of fixed and variable costs
- L. Short-run--Period of time that is too short to permit quantities of particular resources used to vary
- M. Long-run--Period of time that is long enough to change quantities of all resources used
- N. Economies of size--Economic benefits arising because unit costs either decrease or increase as the size of the business and output are expanded
- O. Electronic data processing (EDP)--System of processing accounting records on an electronic computer

INFORMATION SHEET

II. Purposes of whole farm analysis

A. To provide insights into farm business

B. To identify factors affecting profitability and efficiency of the farm business

C. To help cooperator make better management decisions when farm records are kept over several years

D. To allow cooperator to compare the farm business with various comparison standards

III. Resource information needed to complete whole farm analysis (Assignment Sheet #1)

A. Labor

1. Actual or estimated *hours* of unpaid family labor, operator's labor, and hired labor

2. Actual or estimated *value* of unpaid family labor, operator's labor, and hired labor

(NOTE: Opportunity value of working elsewhere may be used for estimated value.)

B. Capital

1. Average farm assets

2. Average net worth

3. Opportunity rate of return on capital

(NOTE: Estimated percentage may be defined as "value of investing capital in an alternative investment.")

C. Farm net worth changes--Amount of increase or decrease between beginning and ending net worth values in a given year

(NOTE: This information may be obtained from the net worth statement.)

D. Interest expense

1. Cash interest expense

2. Accrued unpaid interest adjustment

(NOTE: This adjustment is the difference between the beginning and ending accrued unpaid interest.)

INFORMATION SHEET

IV. Returns to resources (Assignment Sheet #1)

A. Net farm income--Income accruing to unpaid labor, management, and equity capital

(NOTE: Unpaid labor is operator and unpaid family labor.)

B. Return to unpaid labor, total capital, and management--Net farm income plus cash interest expense and an accrued unpaid interest adjustment

C. Return to unpaid labor and management--Measures the effectiveness of the operator and family's unpaid labor and management utilization

(NOTE: The formula for calculating return to unpaid labor and management is:

Return to unpaid labor, total capital and management - Opportunity cost of total capital.)

D. Return to operator's labor, total capital, and management--Return to the total capital invested in the operation and operator's labor and management

(NOTE: This return may be referred to as *adjusted net farm income.* It may be used to compare farm businesses using varying amounts of capital. The formula for calculating return to operator's labor, total capital and management is:

[Return to unpaid labor and management + Opportunity cost of total capital] - Value of unpaid family labor.)

E. Return to total capital and management--Balance of adjusted net farm income available to capital and management after an opportunity cost for operator's labor is removed

(NOTE: This return is useful in comparing alternative uses of capital. The formula for calculating return to total capital and management is:

Return to operator's labor, total capital and management - Value of operator's labor.)

F. Return to management--Balance representing the return to or management's claim on the remainder of adjusted net farm income

(NOTE: Remaining income plus value of operator's labor should be compared to potential local salaries. The formula for calculating return to management is:

Return to total capital and management - Opportunity cost of total capital.)

INFORMATION SHEET

G. Percent return to total capital--Earning's rate of the average farm assets in the farm business

(NOTE: If the return is greater than the cost of borrowed capital, this indicates a profitable use of borrowed capital. The formula for calculating percent return to total capital is:

$$\frac{\text{Return to capital and management}}{\text{Average farm assets}} \times 100.)$$

H. Return to equity capital and management--Return to cooperator's net worth and management ability

(NOTE: The formula for calculating return to equity capital and management is:

Net farm income - Total unpaid labor.)

I. Percent return to average equity--Indicator of how efficiently equity capital is being used

(NOTE: Over a period of five years this figure should be equal to returns on alternative off-farm investments. It is a good measure for a farm business using very little borrowed capital. The formula for calculating percent return to average equity is:

$$\frac{\text{Return to total capital and management}}{\text{Average net worth}} \times 100.)$$

J. Return per unpaid labor year--Provides a measure to compare with nonfarm family income estimates for the area

(NOTE: The formula for calculating return per unpaid labor year is:

$$\frac{\text{Return to unpaid labor and management}}{\text{Man-years unpaid labor}}.)$$

V. Measures of performance useful in interpreting whole farm analysis (Assignment Sheet #2)

A. Size

(NOTE: Over the years, business size has generally been related with profitability. Business size is of interest because of possible economies of scale possible.)

B. Capital ratios

C. Income performance

D. Efficiency ratios

INFORMATION SHEET

VI. Common ways to measure farm business size (Assignment Sheet #2)

A. Crop acres--Superior measure of size if concerned with crop farms

(NOTE: This measure says nothing about productivity of land or adaptability to various enterprises and may not be meaningful in comparing livestock farms.)

B. Pasture acres--Measure of non-crop acres used for livestock production

C. Other acres--Measure of non-productive acres

Examples: Farmstead; fencelines; roads

D. Total acres--Measure of space

(NOTE: Total acres says nothing about amount of investment in the land, or productivity, adaptability, or profitability of land to various enterprises.)

E. Average farm asset--Measure of average farm investment in a given year

F. Value of farm production--Measure of gross production from the land plus the value added to livestock above purchased feed and purchased livestock

(NOTE: Value added that is associated with basic farm production activities. Value of farm production can also be defined as the total farm income, both cash and inventory changes, less purchased feed and purchased feeder livestock.)

G. Value of total annual inputs per farm--Measure of production expenses incurred by the farm

(NOTE: Production expenses include cash operating expenses plus a charge for capital and all labor used in the business. This is one of the better measures of size if similar rates are charged for similar inputs, particularly labor and land. Consideration also should be given to capital turnover and changes in price levels. Value of total annual inputs per farm also may be referred to as *production expenses*.)

H. Man-years--Measure of size in terms of a labor standard; the average amount of work a person can perform in an average work year using average technology

(NOTE: Apparent deficiencies of this measure include actual labor requirements which vary with level of mechanization; work accomplished varies by the person and his or her efficiency, and the economics of labor use.)

INFORMATION SHEET

I. Man-years total labor--Measure of size in terms of the total operator, family, and hired labor performed in the farm business

(NOTE: This measure is determined by dividing the total labor utilized by 2,000 hours.)

J. Man-years unpaid labor--Measure of size in terms of the total operator and family labor performed in the farm business

(NOTE: This measure is determined by dividing the total unpaid labor by 2,000 hours.)

VII. Ratio of capital investment per man-year (Assignment Sheet #2)

A. Is calculated by the average farm assets divided by man-year's total labor

B. Depends on cooperator's policy of valuing capital assets

C. Does not include values of leased land or facilities

D. Is difficult to define a meaningful standard

E. Is best guide to comparing capital investment in cooperator's farm with the average of a group of farms

VIII. Measures of income performance (Assignment Sheet #2)

A. Adjusted net farm income as a percentage of value of production--Measure of efficiency after adjusting net cash income for changes in inventories, receivables, payables, and a charge for capital

(NOTE: A desirable goal for most farms is an adjusted net farm income of 30 percent or more of the value of farm production.)

B. Adjusted net farm income as a percentage of investment--Return to operator's labor, total capital, and management as a percentage of the average farm capital invested

C. Value of farm production as a percentage of investment--Measure of the rate of capital turnover; an indicator of volume of capital used

(NOTE: Capital turnover can be used to measure the time it takes the farm to produce value equivalent to the investment in the farm business. A ratio equaling 25 percent means that it takes four years for the farm to "roll over" its capital. The lower the percentage factor, the longer the period of time required for capital turnover. A high percentage indicates greater volume and more efficient use of capital.)

INFORMATION SHEET

IX. Efficiency ratios for the farm (Assignment Sheet #2)

A. Investment per total farm acre--Measure of size; superior to acres because capital investment includes capital in the form of land

(NOTE: Potential bias in favor of farms that have a high percentage of capital in relation to labor. An operation that has a high investment in machinery and buildings may show size but be a very unprofitable operation.)

B. Investment per crop acre--Indicator of land, livestock, and machinery investment

(NOTE: It is difficult to get a meaningful standard because of the cooperator's policy of valuing assets. It is best to compare cooperator's farm with the average group of farms. In a low profit operation, an above average investment in capital per crop acre could indicate that land, livestock, and machinery are being employed inefficiently.)

C. Value of farm production per man-year total labor--Indicator of how productively labor was used

D. Value of farm production per $100 of production costs--Indicator of the net earnings of the farm business

(NOTE: Earnings less than $100 indicate that value of farm production did not cover all the production expenses. Earnings below 30 percent suggest a negative return to unpaid labor and equity and production expenses were not fully covered. A value above $100 indicates that all costs are covered. The higher the value, the higher economic profit of the business.)

E. Machinery and equipment investment per total farm acre--Average capital investment in machinery and equipment per farm acre

(NOTE: This figure should be considered along with value of production per man-year total labor. With high investment in machinery and equipment, the output per man also should be high.)

F. Machinery and equipment investment per crop acre--Average capital investment in machinery and equipment per crop acre

(NOTE: It is difficult to suggest a standard figure. The best guide is to compare cooperator's farm with the average of a group of similar farms.)

G. Fuel costs per total farm acre--Summary of all fuel, oil, and lube expenses per farm acre

(NOTE: When comparing figures for several years, this ratio may be useful in cash flow projections.)

H. Fuel costs per crop acre--Summary of all fuel, oil, and lube expenses per crop acre

INFORMATION SHEET

I. Fertilizer and chemical costs per total farm acre--Summary of all fertilizers, herbicides, and other chemical expenses per farm acre

(NOTE: This ratio is useful in cash flow planning.)

J. Fertilizer and chemical costs per crop acre--Summary of all fertilizers, herbicides, and other chemical expenses per crop acre

(NOTE: This ratio may be useful in comparing costs over several years with an average of similar type farms.)

X. Types of comparison standards from different information sources

A. Historical record

1. Provides a management tool not available from any other source
2. Demonstrates financial progress over time under specific resource use and management

B. Comparative performance

1. Compares farm to similar farms
2. Establishes standards of performance expressed in both physical and financial terms

Examples: Pounds of feed consumed to produce a pound of gain; fertilizer and chemical costs per acre of grain

C. Budget comparison

1. Sets realistic goals
2. Makes comparison with actual performance
3. Determines whether or not striving for established goals is logical

XI. Steps in outlining a whole farm analysis (Assignment Sheet #3)

A. Determine if business is large enough to earn a satisfactory income or if the volume of business is a serious limitation

B. Determine which enterprises were "losers" and which were "winners"

C. Determine why "loser" enterprises failed to return a profit

D. Determine the effect of expanding or contracting the size of an enterprise "winner" or "loser"

INFORMATION SHEET

XII. Advantages and disadvantages of computerized analysis (Assignment Sheet #4)

- A. Advantages
  1. Capacity of the computer to store and classify large volumes of information in a manner allowing quick retrieval
  2. Highlights income, expenses and farm production; calls cooperator's attention to key analysis figures that give some indication of the farming operation's efficiency and quality of management
  3. Provides cooperator with up-to-date accounting summaries with which to exercise budget control
- B. Disadvantages
  1. Analysis is only as good as the information provided
  2. Outputs are only completed at the end of the year
  3. Accounting system may not be oriented toward a close integration of performance records and budget projections

XIII. Purposes of detailed enterprise analysis

- A. To estimate level of profitability
- B. To identify factors affecting profitability
- C. To determine relative efficiency and profitability of enterprises
- D. To indicate enterprise which could be increased or decreased to increase profits
- E. To help cooperator make management decisions when enterprise records are kept over a number of years

XIV. Allocation of overhead enterprise

- A. Fixed costs--Are allocated according to use record, occupancy percentage, or on the basis of custom rates
- B. Variable costs--Are allocated on the basis of enterprise volume percentage

  (NOTE: Percentage of custom rates are for both variable and fixed costs.)
- C. Income--May be allocated on basis of why receipts were received

  Example: Patronage dividend received from local cooperative because of purchase of supplies and sale of wheat and cotton. Dividend may be allocated by percentage each enterprise contributed to amount of dividend received

INFORMATION SHEET

XV. Measures of enterprise size and volume (Assignment Sheet #5)

A. Total gross income--Measures the total income produced by the enterprise

(NOTE: Total gross income is calculated by adding the livestock/crop gross sales and total other income and subtracting livestock/crop gross purchases.)

B. Total cash expenses--Measure the total cash outflow charged to the enterprise

(NOTE: Total cash expenses are the total of all current farm expenses.)

C. Per unit analysis factors--Measure returns and/or expenses associated with production units of various enterprises

(NOTE: Per unit analysis factors are dependent upon the type of enterprise. The following table lists the different types of enterprises and the per unit analysis factors for the different enterprises.)

Examples:

TYPE OF ENTERPRISE	PER UNIT ANALYSIS FACTORS
General enterprise	Dollars/Unit
Beef cow	Dollars/Cwt. produced; Dollars/Head
Livestock feeding	Dollars/Cwt. produced; Dollars/Head; Pounds/Head
Dairy (Milk production)	Dollars/Cwt. milk; Dollars/Head
Sheep breeding	Dollars/Cwt. produced; Dollars/Head
Swine breeding	Dollars/Cwt. produced; Dollars/Pig produced; Dollars/Litter
Poultry	Dollars/Cwt. produced; Dollars/Head; Dollars/Dozen/Head
Other livestock	Dollars/Cwt. produced; Dollars/Head
Grain and cash crops	Dollars/Acre; Dollars/Unit harvested

INFORMATION SHEET

XVI. Methods of increasing volume of business

A. Increase output

(NOTE: Increased output may be accomplished by more intense management.)

B. Increase size of operations

C. Buy or rent additional acreage

XVII. Measures of enterprise earnings (Assignment Sheet #5)

A. Net returns--Measures total productivity of the farm business

(NOTE: The following formula is used to calculate net returns:

Total gross income - Total cash expenses.)

B. Returns to labor, capital, machinery, and management--Income accruing to operator and unpaid family labor, machinery, and capital investment, and operator's management of the enterprise

(NOTE: The following formula is used to calculate returns to labor, capital, machinery and management:

[Operating income + Operating inventory change] - Operating expenses.)

C. Returns to labor, capital, and management--Return to the capital invested in the enterprise and to operator's labor and management

(NOTE: The following formula is used to calculate return to labor, capital and management:

[Return to labor, capital, machinery and management] - [Depreciation].)

D. Return to capital and management--Balance of capital available to pay debt and management after a charge for operator and unpaid family labor is removed

(NOTE: The following formula is used to calculate return to capital and management:

[Return to labor, capital, and management] - [Unpaid operator and family labor]

Unpaid operator and family labor is calculated as:

[Hours of unpaid operator and family labor] x [Hourly wage]

This is compared with other employment opportunitites to determine if farming is the most profitable investment to make with the cooperator's labor.)

INFORMATION SHEET

E. Return to management--Measures the amount of income remaining to pay the cooperator for management of the farm

(NOTE: The formula used to calculate return to management is:

Return to capital and management - Interest on operating investment

Interest on operating investment equals average investment times the current investment interest rate minus actual interest paid. This is sometimes referred to as the *opportunity cost of capital invested.*)

F. Rate of return on investment--Determines if cooperator would be better suited to invest capital elsewhere; can be compared to alternative investment opportunities

(NOTE: The following formula is used to calculate rate of return on investment:

$$\frac{\text{Return to capital and management + Interest paid}}{\text{Average capital}}.)$$

XVIII. Measures of crop efficiency (Assignment Sheet #5)

A. Yields per acre

(NOTE: Yields per acre vary from year to year. Cooperators probably will want to compare their yields to county averages. The following formula is is used to calculate yields per acre:

Total production÷Number of acres.)

B. Gross value of crops per acre

(NOTE: This measure combines yield and price, giving an indication of which crops provide the highest gross returns. The following formula is used to calculate gross value of crops per acre:

Price x Yield per acre.)

C. Machinery and power costs per acre

(NOTE: Costs widely vary from farm to farm. Higher costs do not always indicate higher yields or profits. The following formula is used to calculate machinery and power costs per acre:

$$\frac{\text{Machinery operating costs + Depreciation}}{\text{Number of acres harvested}}.)$$

INFORMATION SHEET

D. Fertilizer, insecticide, and herbicide costs per acre

(NOTE: If these costs are high, yield also should be high. The following formula is used to calculate fertilizer, insecticide and herbicide costs per acre:

$$\frac{\text{Fertilizers + Lime + Herbicides + Insecticides}}{\text{Number of acres harvested}}\ .)$$

E. Total production costs per unit

(NOTE: These records will be most useful over several year's time. They indicate the profitability of the enterprise on a per bushel or per acre basis.)

XIX. Methods of increasing crop returns

A. Add acreage

Example: Buying or renting

B. Use higher yielding varieties

C. Utilize low return crops in livestock feeds

XX. Measures of livestock earnings efficiency (Assignment Sheet #5)

A. Livestock returns per $100 feed fed

(NOTE: This measure will vary due to the type of livestock enterprises. Comparisons to similar farms will be most useful. The following formula is used to calculate livestock returns per $100 feed fed:

$$\frac{\text{Gross income livestock enterprise (\$)}}{\text{Total cost feed fed to that enterprise (\$)/100}}\ .)$$

B. Total cost of 100 pounds produced

(NOTE: The following formula is used to calculate total cost of 100 pounds produced:

$$\frac{\text{All livestock expense per enterprise}}{\text{Pounds of livestock produced per enterprise/100}}\ .)$$

C. Feed costs per 100 pounds produced

(NOTE: This measure expresses feed expenses related to output and can be influenced by the cost of concentrates, supplements, and roughages. The following formula is used to calculate feed costs per 100 pounds produced:

$$\frac{\text{Cost of supplements + Grains + Roughages + Pasture}}{\text{Pounds of livestock produced/100}}\ .)$$

INFORMATION SHEET

XXI. Measures of livestock production efficiency (Assignment Sheet #5)

A. Pounds of concentrates, grains, and roughages per pound of gain

(NOTE: This measure indicates the amount of feed fed relative to the amount of weight gained. It should be compared to efficient operations in the area or class averages. The following formula is used to calculate pounds of concentrates, grains, and roughages per pound of gain:

$$\frac{\text{Pounds of concentrates, grains, and roughages}}{\text{Pounds of gain}}\text{.)}$$

B. Average weaning weight

(NOTE: This measure is useful to indicate feed and rate of gain efficiency over several production periods. The following formula is used to calculate the average weaning weight:

$$\frac{\text{Total pounds of calves weaned}}{\text{Number of calves weaned}}\text{.)}$$

C. Weight weaned per cow

(NOTE: The following formula is used to calculate weight weaned per cow:

$$\frac{\text{Total pounds of calves weaned}}{\text{Number of cows over 2 years of age}}\text{.)}$$

D. Average days in feedlot

(NOTE: This measure indicates feed conversion efficiency and should be compared to efficient cooperators in the area or class averages. The following formula is used to calculate average days in feedlot:

$$\frac{\text{Total animal days on feed}}{\text{Number of feeders}}\text{.)}$$

E. Percent calf crop

(NOTE: The following formula is used to calculate percent calf crop:

$$\frac{\text{Cows calving}}{\text{Cows bred}} \times 100$$

A good rule of thumb is calve over 95% and raise over 90% to weaning weight.)

INFORMATION SHEET

F. Average daily gain

(NOTE: The following formula is used to calculate average daily gain:

$$\frac{\text{Ending weight - Beginning weight}}{\text{Number of days on feed}}$$

A good rule of thumb for feeder cattle is 2.5 to 2.75 pounds per day gain in the finishing period. Pigs should be gaining at least one pound for four pounds of feed in the finishing period.)

G. Pigs farrowed or weaned per litter

(NOTE: The following formula is used to calculate pigs farrowed or weaned per litter:

$$\frac{\text{Total number of pigs farrowed or weaned}}{\text{Number of gilts and sows farrowed}}$$

One standard to consider is 9.5 pigs or better from sows, eight pigs or better from gilts, and 85% or better of pigs farrowed reach market weight.)

H. Feed per dozen eggs

(NOTE: The following formula is used to calculate feed per dozen eggs:

$$\frac{\text{Total feed fed (pounds)}}{\text{Dozens of eggs produced}}$$

This figure indicates feed conversion efficiency.)

I. Eggs per hen

(NOTE: The following formula is used to calculate eggs per hen:

$$\frac{\text{Number of eggs per period}}{\text{Number of birds}}$$

Twenty-one dozen eggs per bird over a 13-month laying period average 93% Grade A, 72% large, extra large, and jumbo.)

XXII. Measures of performance between investment and income

A. Rate of return to capital

(NOTE: This measure determines how well the cooperator is investing capital. A minimum figure above current interest rates at local savings institutions should be set. The following formula is used to calculate rate of return to capital:

$$\frac{\text{Net return to capital}}{\text{Equity (Net worth)}}\text{.)}$$

INFORMATION SHEET

B. Operating ratio

(NOTE: The following formula is used to calculate operating ratio:

$$\frac{\text{Total input costs}}{\text{Gross farm income}} \times 100$$

A good figure to shoot for is 40%. The lower the input costs are, the more efficient the farm manager.)

C. Rate of capital turnover

(NOTE: The following formula is used to calculate rate of capital turnover:

$$\frac{\text{Value of farm production}}{\text{Average farm capital assets}}$$

Depending on the enterprises, 50% is a general figure to strive for. This indicates efficiency of capital assets used. Rate of capital turnover also may be known as *gross income per $1,000 invested figure*.)

D. Overhead ratio

(NOTE: The following formula is used to calculate overhead ratio:

$$\frac{\text{Total overhead expenses}}{\text{Gross income}} \times 100$$

Strive for a 30% rate. This figure shows when per unit overhead costs are declining because of increased output. If output drops, the figure will increase.)

WHOLE FARM AND DETAILED ENTERPRISE ANALYSIS
UNIT IV

ASSIGNMENT SHEET #1–COMPLETE AN *OKLAHOMA YOUNG FARMER RECORD BOOK* WHOLE FARM BUSINESS ANALYSIS FORM

NAME ______________________________ SCORE ______________

Farm analysis is the climax to any record-keeping activity. It is only through this phase that the farmer gains insight into the farm business. Without it, record-keeping is little more than accounting for tax liability. Comparing production and performance is a more enjoyable activity to cooperators and may serve to give helpful leads for farm business improvements.

Complete the whole farm business analysis form on the following page using the information below.

(NOTE: Form numbers are from the *Oklahoma Young Farmer Record Book*. This is where the needed information can be found.)

NET WORTH STATEMENT INFORMATION (Forms 6.3 and 6.4)

Farm net worth change (Book value)	$25,000.00
Farm net worth change (Current value)	$33,000.00
Accrued, unpaid interest adjustment	$2,075.00
Beginning farm assets	$325,000.00
Ending farm assets	$385,000.00
Beginning net worth	$178,750.00
Ending net worth	$211,750.00

INCOME STATEMENT INFORMATION (Form 6.5)

Net farm income	$27,000.00

CASH FLOW SUMMARY INFORMATION (Form 6.2)

Cash interest expense	$15,000.00

SUPPLEMENTAL RECORDS INFORMATION (Section 5)

Unpaid family labor	600 hours
Operator labor	2,400 hours
Hired labor	2,125 hours (Total cost: $8,500.00)

ASSUMED INFORMATION

Opportunity rate of return on capital	8.0%
Estimate operator labor and hired labor	$3.50 per hour

ASSIGNMENT SHEET #1

FORM 6.6 **WHOLE FARM BUSINESS ANALYSIS** **FOR** **19____**

RESOURCES		
LABOR	**Hours**	**Value**
1. Unpaid Family Labor (form S-12 or estimate)		$
2. Operator's Labor (form S-12 or estimate)		
3. Total Unpaid Labor (add line 1 + line 2)		
4. Hired Labor (form 6.2 or form S-12)		
5. Total Labor Utilized (add line 3 + line 4)		
A. MAN YEARS TOTAL LABOR (line 5 ÷ 2000)	Yrs.	
B. MAN YEARS UNPAID LABOR (line 3 ÷ 2000)	Yrs.	
CAPITAL		Value
6. Average Farm Assets (form 6.3 line 34) (Beginning + Ending) ÷ 2	$	
7. Average Farm Net Worth (form 6.4 line 68) (Beginning + Ending) ÷ 2	$	
8. Opportunity Rate of Return on Capital (estimate)	%	
9. Opportunity Cost of Total Capital (line 6 X line 8)		$
10. Opportunity Cost of Equity Capital (line 7 X line 8)		$
FARM NET WORTH CHANGE		
C. BOOK VALUE (form 6.4 line 68 col. 9)		
D. CURRENT VALUE (form 6.4 line 68 col. 12)		
INTEREST EXPENSE		
11. Cash Interest Expense (form 6.2 line 27)	$	
12. Accrued Unpaid Interest Adjustment (form 6.4 line 57 col. 9)	$	
13. Accrued Interest Expense (add line 11 + line 12)		$

RETURN TO RESOURCES		
		Value
E. NET FARM INCOME (form 6.5 line G)		$
14. Accrued Interest Expense (line 13)	$	
F. RETURN TO UNPAID LABOR, TOTAL CAPITAL, AND MANAGEMENT (add line E + line 14)		$
15. Opportunity Cost of Total Capital (line 9)	$	
G. RETURN TO UNPAID LABOR AND MANAGEMENT (line F minus line 15)		$
16. Opportunity Cost of Total Capital (line 9)	$	
17. Value of Unpaid Family Labor (line 1)	$	
H. RETURN TO OPERATOR'S LABOR, TOTAL CAPITAL, AND MANAGEMENT (line G plus line 16 minus line 17)		$
18. Value of Operator's Labor (line 2)	$	
I. RETURN TO TOTAL CAPITAL AND MANAGEMENT (line H minus line 18)		$
19. Opportunity Cost of Total Capital (line 9)	$	
J. RETURN TO MANAGEMENT (line I minus line 19)		$
K. PERCENT RETURN TO TOTAL CAPITAL (line I ÷ line 6) X 100		%
L. RETURN TO EQUITY CAPITAL AND MANAGEMENT (line E minus line 3)		$
M. PERCENT RETURN TO AVERAGE EQUITY CAPITAL (line L ÷ line 7) X 100		%
N. RETURN PER UNPAID LABOR YEAR (line G ÷ line B)		$

WHOLE FARM AND DETAILED ENTERPRISE ANALYSIS
UNIT IV

ASSIGNMENT SHEET #2--COMPLETE AN *OKLAHOMA YOUNG FARMER RECORD BOOK* MEASURES OF PERFORMANCE FORM

NAME ______________________________ SCORE ____________

Comparative analysis using numerous standards of comparison often is NEEDED for an accurate assessment of farm business performance. No single ratio is adequate and several performance indicators are interrelated; therefore, interpretations must be made with caution.

It is important that analysis include the same set of measurements from year-to-year so that meaningful comparisons can be made over time. Due to the variable nature of farm prices and production, any one year's results may not be too meaningful.

Continuing analysis also may be used to compare cooperator's farm with farm record summaries that may be published on an area, state or national basis.

Some of the more common measures of performance are included in the *Oklahoma Young Farmer Record Book.*

Using information on the following page, complete the measures of performance form.

(NOTE: Form numbers are from the *Oklahoma Young Farmer Record Book*. This is where the needed information can be found.)

ASSIGNMENT SHEET #2

CASH FLOW SUMMARY INFORMATION (Form 6.2)

Operating sales	$217,000.00
Sales of livestock purchased for resale	$63,000.00
Breeding livestock sales	$3,000.00
Sale of other capital assets	$0.00
Feed purchases	$8,000.00
Livestock purchased for resale	$47,500.00
Breeding livestock purchased	$3,000.00
Cash interest expense	$15,000.00
Fuel and oil expense	$8,250.00
Fertilizer and chemical expense	$15,000.00

NET WORTH STATEMENT INFORMATION (Forms 6.3 and 6.4)

Net change in accounts receivable	$1,075.00
Livestock inventory change	$30,000.00
Feed, crops, and supplies inventory change	$1,925.00
Net change in feed and livestock accounts payable	$700.00

INCOME STATEMENT INFORMATION (Form 6.5)

Beginning machinery and equipment	$65,000.00
Ending machinery and equipment	$60,000.00

WHOLE FARM ANALYSIS INFORMATION (Form 6.6)

Average farm assets	$355,000.00
Return to operator's labor, total capital and management	$41,975.00
Man-year's total labor	$2.56
Man-year's unpaid labor	$1.50

SUPPLEMENTAL RECORDS INFORMATION (Section S)

Crop acres	750
Pasture acres	200
Other acres	50

FORM 6.7

ASSIGNMENT SHEET #2
MEASURES OF PERFORMANCE

FOR 19____

SIZE		
A. CROP ACRES (form S-10 or estimate)		
B. PASTURE ACRES (form S-10 or estimate)		
C. OTHER ACRES(Farmstead, fences,)(form S-10 or est.)		
D. TOTAL ACRES (add line A + line B + line C)		AC
E. AVERAGE FARM ASSETS (form 6.6 line 6)		$
Value of Farm Production		
1. Operating Sales (form 6.2 line A)	$	
2. Sale of Livestock Purchased for Resale (form 6.2 line 16)	$	
3. Breeding Livestock Sales (form 6.2 line 18)	$	
4. Gain or Loss on Sale of Capital Assets Excluding Livestock (forms 3.1 thru 3.5)	$	
5. Net Change in Account Receivable (form 6.3, line 13)	$	
6. Livestock Inventory Change (form 6.5 line 13 col. 3)	$	
7. Feed, Crops and Supplies Inventory Change (form 6.5 line 14 col. 3)	$	
8. Less Feed Purchases (form 6.2 line 28)	$	
9. Less Livestock Purchased for Resale (form 6.2 line 45)	$	
10. Less Breeding Livestock Purchases (form 6.5 line 8)	$	
11. Net Change in Feed and Livestock Accounts Payable (form 6.4 add lines 50 thru 52)	$	
12. Value of Home Used Products (form S-1)	$	
F. VALUE OF FARM PRODUCTION (add lines 1 thru 11)		$
13. Return to Operator's Labor, Total Capital and Management (Adjusted Net Farm Income) (form 6.6 line H)	$	
G. VALUE OF TOTAL ANNUAL INPUTS PER FARM (Production Expenses) (line F minus line 13)		$
Man-Year		
H. MAN-YEARS TOTAL LABOR (form 6.6 line A)		Yrs.
I. MAN-YEARS UNPAID LABOR (form 6.6 line B)		Yrs.

CAPITAL RATIOS		
J. CAPITAL INVESTMENT PER MAN-YEAR (line E ÷ line H)		$
INCOME PERFORMANCE		
K. ADJUSTED NET FARM INCOME AS A PERCENTAGE OF VALUE OF PRODUCTION (line 13 ÷ line F) X 100		%
L. ADJUSTED NET FARM INCOME AS A PERCENTAGE OF INVESTMENT (line 13 ÷ line E) X 100		%
M. VALUE OF FARM PRODUCTION AS A PERCENTAGE OF INVESTMENT (Rate of Capital Turnover) (line F ÷ line E) X 100		%
EFFICIENCY RATIOS FOR THE FARM		
N. INVESTMENT PER TOTAL FARM ACRE (line E ÷ line D)		$
O. INVESTMENT PER CROP ACRE (line E ÷ line A)		$
P. VALUE OF FARM PRODUCTION PER MAN-YEAR TOTAL LABOR (line F ÷ line H)		$
Q. VALUE OF FARM PRODUCTION PER $100 OF PRODUCTION COSTS line F ÷ (line G ÷ 100)		$
14. Machinery and Equipment Investment (form 6.3 line 29) (Beginning + Ending) ÷ 2	$	
R. MACHINERY AND EQUIPMENT INVESTMENT PER TOTAL FARM ACRE (line 14 ÷ line D)		$
S. MACHINERY AND EQUIPMENT INVESTMENT PER CROP ACRE (line 14 ÷ line A)		$
T. FUEL COSTS PER TOTAL FARM ACRE (form 6.2 line 36 ÷ line D)		$
U. FUEL COSTS PER CROP ACRE (form 6.2 line 36 ÷ line A)		$
V. FERTILIZER AND CHEMICAL COSTS PER TOTAL FARM ACRE (form 6.2 line 30 ÷ line D)		$
W. FERTILIZER AND CHEMICAL COSTS PER CROP ACRE (form 6.2 line 30 ÷ line A)		$

WHOLE FARM AND DETAILED ENTERPRISE ANALYSIS
UNIT IV

ASSIGNMENT SHEET #3--COMPLETE A STEP-BY-STEP OUTLINE OF YOUR WHOLE FARM ANALYSIS

NAME ______________________________________ SCORE ________________

After completing and evaluating your net worth statement, income statement, cash flow summary, and whole farm analysis, it may be necessary to pursue the analysis. The following procedure may be helpful in pointing out weaknesses in the farm business. Most of the questions may be answered with a "yes" or "no."

(NOTE: It will be evident that a very elaborate accounting system would be needed to give definitive answers to all the questions cited or implied in the following outline. Questions may be made more managable because of the following three reasons:

1. The first step in getting the right answer is to *ask the right question*. Even though answers to these questions may be imperfect, they are more likely to be in the right direction if the proper question is asked in the first place;
2. *Judgment* is still a very necessary source of information in most decision-making. This same "judgment," arising from your past decisions, can often take up where your farm records leave off; and
3. The alternative to an imperfect answer based in part on judgment may be better than no answer at all.

To assist you in completing a step-by-step outline of your whole farm analysis, answer the following questions.

STEP 1. Is the business large enough to earn a satisfactory level of income? Yes _____ No _____ Is the volume of business a serious limitation? Yes _____ No _____

(NOTE: You may refer to income statement.)

A. If the answer is yes (large enough), go to step three.

B. If the answer is no (not large enough), what resource most limits volume of production? See examples on following page

____

____

____

____

____

____

ASSIGNMENT SHEET #3

Examples:

LIMITED RESOURCE	CONSIDER THE FOLLOWING ALTERNATIVES
Land	More intensive use of cropland with terracing if necessary; Higher of lower rates of fertilization; Expand "vertically" through livestock if financing is available but avoid reducing intensity of land use unless presently too intensive; Consider alternative enterprises, such as speciality crops; Rent or buy more cropland
Capital	Rent more land, if available; Use "high" capital turnover livestock; Examples: Stockers; swine; dairy Produce more or less per acre, especially grain crops; Own few machines, hire more work done and use machines you own for custom work
Labor	Rely on low labor requirement livestock; Example: Feeder pigs and beef Raise more grain and less hay or silage; Time production for less labor competition between crops and livestock; Use larger and newer machinery and equipment for faster work and fewer delays; Invest time in planning systems rather than wasting time operating situations; Eliminate unnecessary work; Consider two- or three-person unit

ASSIGNMENT SHEET #3

STEP 2. Which enterprises were losers and which were winners?

(NOTE: Refer to detailed enterprise analysis.)

A. List the headings for:

Examples: Stockers; swine; fattening; cow-calf

"WINNERS"	"LOSERS"
a. ____________	a. ____________
b. ____________	b. ____________
c. ____________	c. ____________
d. ____________	d. ____________
e. ____________	e. ____________
f. ____________	f. ____________

B. Were prices and weather conditions reasonably "normal"?

1. If normal, go on to Step 3 (Losers) or Step 4 (Winners)
2. If abnormal, either
   a) Adjust the costs and returns to reflect more "normal" weather and prices and ask Step 2 again; or
   b) Examine prior year's records and ask Step 2 again

STEP 3. Why did the "loser" fail to return a profit (or a larger profit)?

(NOTE: Refer to the detailed enterpise analysis.)

ASSIGNMENT SHEET #3

Examples:

PROBLEM	CONSIDER THE FOLLOWING ALTERNATIVES
Prices received were lower than what other farmers received	Was quality inferior because of poor handling?; Examples: Wet grain; hay storage; poor storage Was timing of sales poor because of selling at seasonal lows, not following outlook information, or no storage facilities?; Was the market inferior because of small size, inefficiency, lack of quality market outlets or lack of competition?
Production per unit was too low Examples: Per acre; per cow; per cwt.	Diseases and parasites; Weeds and insects; Timing of field operations; Inadequate fertilizer rates; "Poor doing" livestock; Too many low profit crops; Unbalanced or costly rations; Too "busy" to attend to details that pay;
Costs were too high	Is adequate time being spent in studying the market, shopping, and bargaining for price? Is lack of storage costing too much? Could purchases be timed better to take advantage of seasonal lows in price? Which costs could be reduced or eliminated if the enterprise was dropped or reduced? Can cheaper items be subsitituted?; Is each cost paying for itself?
Fixed or ownership costs of buildings, machinery and equipment too high	Was capacity of these items fully used? Could costs have been spread over more units (acres, tons, head)?

ASSIGNMENT SHEET #3

STEP 4. What would be the effect of expanding on contracting the size of either a "winner" or a "loser"?

(NOTE: It should be pointed out that risk, utilization of available resources, and protection against bankruptcy, may be objectives just as important as increasing profits. In north central Oklahoma, alfalfa is a profitable enterprise, but labor and equipment constraints and risk prevent putting the whole farm in alfalfa production.)

A. Which costs would:

1) Neither be increased nor decreased by moderate increases or decreases

Example: Fixed costs associated with fixed equipment presently with surplus capital

2) Increase more than proportionately if size were moderately increased

Examples: New buildings, new equipment

3) Continue as a cost, but would be usable in another enterprise if this enterprise was reduced or dropped

4) Increase or decrease as size is increased or decreased, but less than proportionately to change in size

5) Increase or decrease in direct proportion to units (acres, tons, head)

ASSIGNMENT SHEET #3

B. Could buying and selling be improved if larger enterprise size made possible:

1) Volume discounts on purchases? ____________________

2) Volume premiums on sales? ____________________

3) Better product quality or handling? ____________________

4) More attention to management or marketing? ____________________

5) More uniform lots of products sold? ____________________

C. Would larger enterprise size bring:

1) Better management? ____________________

2) More difficult management? ____________________

D. Would expansion necessitate an unfavorable shift to high cost inputs?

Example: Crop residues and pasture to silage and hay

____

E. If the enterprises were dropped, could the land, labor, and capital it now uses be more profitably employed elsewhere or would parts go unused?

____

____

F. If the enterprises were expanded, would the added benefits exceed the added costs and reduced returns brought about by the change?

(NOTE: You may refer to partial budgets.)

____

____

G. If the enterprises were reduced or dropped, would costs be lowered more than incomes or would the reverse be more likely?

____

____

WHOLE FARM AND DETAILED ENTERPRISE ANALYSIS
UNIT IV

ASSIGNMENT SHEET #4--COMPILE THE INFORMATION NEEDED FOR A WHOLE FARM COMPUTER ANALYSIS

NAME ______________________________ SCORE ______________

An alternative to hand computing the *Oklahoma Young Farmer Record Book* financial statements, whole farm analysis, and enterprise analysis is available through the Oklahoma State University computerized record program known as "*Costfinder*."

The primary advantage of a computerized records summary is the capacity of the computer to store and classify large volumes of information in a manner that allows quick retrieval. It should be noted that there is no magic in the computer for doing record-keeping. In fact for most cooperators, this method may not reduce the time put into record-keeping. The computer does not offer the cooperator the potential for obtaining more information; the cooperator must provide complete information to obtain meaningful analysis data.

By using the following forms, a cooperator may compile the information needed from the *Oklahoma Young Farmer Record Book* for the computer to calculate the farm business financial statements, whole farm analysis and enterprise analysis.

Below are instructions for completing the *Oklahoma Young Farmer Record Book* computerized year-end analysis input forms. Using your own information, complete a computerized year-end analysis.

I. Form 1.1--ENROLLMENT FORM

   A. Line 1--Cooperator's name

   B. Line 2--Cooperator's mailing address

   C. Line 3--Post office zip code and county where post office is located

   D. Line 4--Enterprises

      1) An *enterprise* is defined as a "separable department" of the farm business on which costs and returns are desired. In *Costfinder*, two digits are used to define an enterprise identified on the forms as "ENT". Divisions within the individual enterprises are possible within a two-digit "lot" column available for each enterprise

      2) Enterprise codes between "02" and "09" inclusive may be used for special unique enterprises on individual farms which have no special meaning to the *Costfinder* system. Codes from "10" through "99" have the meanings listed on the following page and must be used within the definition given.

ASSIGNMENT SHEET #4

ENT. Code	
10	BEEF General
11	BEEF Breeding grade
12	BEEF Breeding purebred
13	BEEF Growing stockers
14	BEEF Fattening
15-19	Special Beef
20	DAIRY General
21	DAIRY Cows grade
22	DAIRY Cows purebred
23	DAIRY Growing replacements
24-29	Special Dairy
30	SHEEP General
31	SHEEP Breeding grade
32	SHEEP Breeding purebred
33	SHEEP Growing
34	SHEEP Fattening
35-39	Special Sheep
40	SWINE General
41	SWINE Breeding grade
42	SWINE Breeding purebred
43	SWINE Growing
44	SWINE Fattening
45-49	Special Swine

ENT. Code	
50	Other livestock
51	Bees
52	Dogs
53	Goats
54	Horses
55	Rabbits
56	Furbearing
60	Poultry
61	Broilers
62	Layers
63	Ducks
64	Geese
66	Guineas
70	Grain
71	Barley
72	Corn
73	Grain sorghum
74	Oats
75	Rye
76	Wheat
77-79	Other grains
80	Hay & forage
81	Alfalfa
82	Brome

ENT. Code	
83	Bermuda
84	Grass, tame
85	Native pasture
86	Silage
87	Sudan
88	Forage sorghums
89	Graze-out small grain
90	Cash crops
91	Broomcorn
92	Cowpeas & mungbeans (Pulse crops)
93	Cotton
94	Guar (Mucilege crops)
95	Peanuts
96	Pecans & other tree nuts
97	Fruits, melons, berries
98	Oilseed, soybeans, safflower, castor-beans, sesame
99	Vegetables

3) ENT number--Enter the appropriate enterprise code (ENT code) number for each major enterprise

4) ENT units--Enter the total units to be used in the enterprise analysis

(NOTE: Livestock units are in number of head. Crop units are in acres harvested.)

5) ENT description--Enter the description for the enterprise

Examples: Summer stockers; cotton; cow-calf

E. Line 5--Farm number (leave blank, to be assigned by computer center.)

F. Line 6--The YEAR the analysis is reporting. NO. OF PREVIOUS REPORTS refers to number of years the cooperator has completed a computerized analysis

G. Line 7--Percentage of undivided utilities that should be allocated to the farm; the percentage of total utilities used in the farm business

(NOTE: 0 percent should be used if utilities have been allocated to the farm business and family living throughout the year.)

ASSIGNMENT SHEET #4

H. Line 8--Percentage of undivided auto expense that should be allocated to the farm; the percentage of the personal auto expense used in the farm business

(NOTE: 0 percent should be used if auto expenses have been allocated to the farm business and family living throughout the year.)

I. Line 9--Total months of operator labor this year

(NOTE: This may be obtained from section S-Supplemental Records or estimated. Man-year is 2,000 hours or 12 months.)

J. Line 10--Total months of unpaid family labor this year

(NOTE: This may be obtained from Section S-Supplemental records or estimated. Man-year is 2,000 hours or 12 months.)

K. Line 11--Total months of hired labor paid this year

(NOTE: This may be obtained from Section S-Supplemental records or Section 4-Credit and Hired Labor, Form 4.7. Man-year is 2,000 hours or 12 months.)

L. Line 12--Total acres of land operated this year

(NOTE: This is the total acres of owned and rented land farmed. Information may be obtained from Section S-Supplemental Records.)

M. Line 13--Advisor's signature and organization represented

Example: Ed Scammahorn representing Caddo-Kiowa AVTS

II. Computer code

A. A numerical dictionary of definitions used in farm records

B. Provide a logical basis for classifying entries of information

C. Main code is composed of five columns

1. The first two digits are accounting categories which set up major subdivisions of the complete record

ASSIGNMENT SHEET #4

a. A--Account code separates cash items from those charged and similar divisions

(1) ACCOUNT CODE

0 Cash transaction (blank)
1 Charged or money borrowed
2 Paid on account
3 Trade
4 Internal transfer
5 Inventory
6 Depreciable capital asset
7 Production-Livestock births
8 Harvest and weaning
9 Memoranda-deaths

b. T--Transaction code sets up major tax categories for tax accounting

(1) TRANSACTION

0 Nonfarm income & expense & special tax cases
1 Sales of raised livestock and crops
2 Sales of raised livestock products & specialty crops
3 Income from other farm sources
4 Expenses of the current tax type, usually for direct production
5 Expenses of the current tax type, usually for general farm use
6 Sales of livestock & crops which have been previously purchased for resale
7 Purchases of livestock & crops for holding for later resale
8 Sales of capital assets, either depreciable or eligible for capital gains
9 Purchases of capital assets, depreciable or eligible for capital gains

2. The next three digits of code are (I) Item, (G) General, and (D) Detail

(NOTE: These allow for more detailed sorting and need not be learned since they may be coded at processing center when proper description is given.)

ASSIGNMENT SHEET #4

3. TI codes--Major tax categories

Example: An ATI of 044 is (A) cash paid for a (T) farm expenses, (I) feed purchased

NONFARM AND SPECIAL CASES

TI	INCOME
01	Taxable income
02	Loans from others

TI	EXPENSE
03	Deductable expense
04	Itemized expense
05	Personal draw
06	Loans to others
07	Undivided utilities
08	Undivided auto expense
09	Memoranda

CURRENT FARM

10	(Sales)
11	Beef
12	Dairy
13	Sheep
14	Swine
15	Other livestock
16	Poultry
17	Grain
18	Hay & forage
19	Cash crops
20	Rental income
21	Fruits & nuts
22	Dairy products
23	Wool
24	Meat products
25	Other livestock
26	Eggs
27	Fruits
28	Vegetables
29	Supplies sold
30	Special income
31	Merchandise Rec.
32	Machine work
33	Breeding fees
34	Wood & lumber
35	Patronage refund
36	Agri. program pay
37	Tax refunds
38	Insurance proceeds
39	Miscellaneous

40	Expense
41	Labor hired
42	Repairs
43	Interest
44	Feed
45	Seeds & plants
46	Fertilizer-lime
47	Machine hire
48	Supplies purchased
49	Breeding fees
50	Miscellaneous
51	Veterinary medicine
52	Gas-fuel-oil
53	Storage-warehouse
54	Taxes
55	Insurance
56	Utilities
57	Farm Rent
58	Trucking & travel
59	Conservation

ASSIGNMENT SHEET #4

PURCHASE FOR RESALE

TI	INCOME	TI	EXPENSE
60	Futures contracts	70	Futures contracts
61	Beef	71	Beef
62	Dairy	72	Dairy
63	Sheep	73	Sheep
64	Swine	74	Swine
65	Other livestock	75	Other livestock
66	Poultry	76	Poultry
67	Hay & forage	77	Hay & forage
68	Forage	78	Forage
69	Cash crops	79	Cash crops

CAPITAL ASSETS

80	(Sold)	90	(Bought)
81	Beef breeding	91	Beef breeding
82	Dairy	92	Dairy
83	Sheep	93	Sheep
84	Swine	94	Swine
85	Other livestock	95	Other livestock
86	Motor vehicles	96	Motor vehicles
87	Machinery & equipment	97	Machinery & equipment
88	Buildings & improvements	98	Buildings & improvements
89	Land	99	Land

III. Form 1.2--Cash Flow Summary income

A. Use *Oklahoma Young Farmer Record Book* Form 6.2 (Cash Flow Summary) to obtain amounts

B. Line numbers correspond to Cash Flow Summary form

C. Complete the ATIGD code where necessary

(NOTE: The IGD code can be completed at the processing center.)

D. Allocate amount to an enterprise (ENT) number (see Form 1.1), *only if 100 percent of the amount is credited to an enterprise*

(NOTE: Allocation Forms 1.9 or 1.11 are used if income is allocated to more than one enterprise.)

E. Complete description, if necessary

F. Enter total number of units sold, if applicable

ASSIGNMENT SHEET #4

G. Enter Q Code (Q CD) number for the description of the units

1. 1 Head
   2 Bushels
   3 Tons
   4 Dozen
   5 Gallons
   6 Bales
   7 Acres
   8 Hours
   9 Days

H. Enter total pounds sold, if applicable

(NOTE: Hash line on form indicates a decimal point.)

I. Enter the year-end total dollar amount

Examples:

Line No.	ATIGD	ENT No.	Description	Units	Q CD	Pounds	Amount
01	01 76	7600	Crop Wheat	5000	2	30,000.0	$17,250.00
15	06 13	1300	Resale Livestock: Stocker Steers	80	1	50,080.0	$47,668.00

(NOTE: Line 1--The income amount of $17,250.00 for 5,000 bushels of raised wheat [ATIGD--0176] has been allocated to the wheat enterprise [7600]. Line 2--The income amount of $47,668.00 for 80 head of purchased stocker steers [ATIGD--0613] has been allocated to the stocker enterprise [1300].)

J. Enter all income from the Cash Flow Summary on Form 1.2

(NOTE: Do not enter "Inflow from Loans" amount.)

IV. Form 1.3--Cash Flow Summary expense

A. Use *Oklahoma Young Farmer Record Book* Form 6.2 (Cash Flow Summary) to obtain amounts

B. Line numbers correspond to Cash Flow Summary form

C. Complete the ATIGD code where necessary

(NOTE: The IGD code can be completed at the processing center.)

D. Allocate to an enterprise (ENT) number (see Form 1.1) *only if 100 percent of the amount is expensed to an enterprise*

(NOTE: Allocation Forms 1.10 or 1.11 are used if expense is allocated to more than one enterprise.)

E. Complete the description, if necessary

F. Enter total number of units purchased, if applicable

(NOTE: Hash line on form indicates a decimal point.)

ASSIGNMENT SHEET #4

G. Enter Q Code (Q CD) number for the description of the units

1. 1 Head
   2 Bushels
   3 Tons
   4 Dozen
   5 Gallons
   6 Bales
   7 Acres
   8 Hours
   9 Days

H. Enter the total pounds purchased, if applicable

(NOTE: Hash line indicates decimal point.)

I. Enter the year-end total dollar amount

Examples:

Line No.	ATIGD	ENT No.	Description	Units	Q CD	Pounds	Amount
25	041		Hired labor	1250	8		$ 4,375.00
28	044	4400	Feed			640,000.0	$56,000.00
44	071	1300	Livestock purchased for resale: Stockers	80	1	32,000.0	$28,800.00

(NOTE: Line 25--The expense amount of $4,375.00 for 1,250 hours of hired labor [ATIGD--041] is not allocated to an enterprise. Line 28--The expense amount of $56,000.00 for 640,000 pounds of purchased feed [ATIGD--044] has been allocated to the swine fattening enterprise [4400]. Line 44--The expense amount of $28,800.00 for 80 head of purchased for resale stockers [ATIGD--071] has been allocated to the stocker enterprise [1300].)

J. Enter all expenses from the Cash Flow Summary (Form 1.3)

(NOTE: Do not enter "Outflow to Loans" amount.)

V. Form 1.4--Inventory

A. Complete inventory information is needed for the net worth and income statements and the whole farm and enterprise analysis (Section 3)

(NOTE: A listing of owned assets.)

B. Complete the ATIGD code where necessary

(NOTE: The IGD code may be completed at the processing center.)

C. Allocate asset to enterprise or enterprises

(NOTE: Any amounts not allocated will remain in the overhead enterprise.)

D. Enter total number of units, if applicable

E. Enter Q Code (Q CD) number for the description of the units, if applicable

1. 1 Head
   2 Bushels
   3 Tons
   4 Dozen
   5 Gallons
   6 Bales
   7 Acres
   8 Hours
   9 Days

ASSIGNMENT SHEET #4

F. Enter the total dollar amount or dollar amount to be allocated to each enterprise

G. Complete the information for the beginning and ending of the year

H. Beginning and ending cash account balances

1. Checking account balances

   (NOTE: This may be obtained from cash flow summary.)

2. Savings account balances

   (NOTE: This may be obtained from cash flow summary or accounts receivable form.)

3. Cash balances

   (NOTE: This may be obtained from cash flow summary or cash-on-hand form.)

I. Beginning and ending values for personal assets

Examples: Farm home; boat; personal share of auto; jewelry; stocks and bonds

(NOTE: Important for non-farm net worth statement.)

J. Beginning and ending inventory of machinery and equipment values

1. Total dollar values from Form 3.2

2. Allocate the inventory values to the appropriate enterprise number

   Example: Machinery and equipment values for the beginning of the year totaled $80,000.00 with 50 percent used in the wheat enterprise, 25 percent in the stocker enterprise, and 25 percent for general farm work (overhead)

   Beginning of Year 19___

ATIGD	ENT. Number	UNITS	Q CD	AMOUNT
597	7600	____	____	$40,000.00
597	1300	____	____	20,000.00
597	____	____	____	20,000.00

(NOTE: ENT Number--7600 [wheat] ; 1300 [Stockers] ; blank [overhead] .)

ASSIGNMENT SHEET #4

K. Beginning and ending inventory of buildings and improvement values

1. Total dollar values from Form 3.5

2. Allocate the inventory values to the appropriate enterprise number

Example: Building and improvement values for the beginning of the year totaled $10,000.00 with 50 percent used by the cow-calf operation, 25 per cent used by the stocker operation, and 25 per cent used for a farm shop (overhead)

Beginning of Year 19__

ATIGD	ENT. Number	UNITS	Q CD	AMOUNT
598	1100	____	____	$5,000.00
598	1300	____	____	2,500.00
598	____	____	____	2,500.00

(NOTE: ENT. Number--1100 [cow-calf]; 1300 [stockers]; blank [overhead].)

L. Beginning and ending land values

1. Total dollar values from Form 3.5

2. Allocate the values to the appropriate enterprise number

Example: Land values for the beginning of the year totaled $240,000 for 480 acres. 300 acres of the land was used for wheat, 150 acres was pasture and 30 acres was farmstead, fences and roads (overhead)

Beginning of Year 19__

ATIGD	ENT. Number	UNITS	Q CD	AMOUNT
599	7600	300	7	$150,000.00
599	1100	150	7	75,000.00
599	____	30	7	15,000.00

(NOTE: ENT. Number--7600 [wheat]; 1100 [cow-calf]; blank [overhead].)

ASSIGNMENT SHEET #4

VI. Form 1.5--Inventory of livestock

A. Complete beginning and ending inventory of all livestock on hand. These include swine, beef, dairy, and others

B. Use *Oklahoma Young Farmer Record Book* Form 3.6

C. Complete ATIGD codes, if necessary

(NOTE: IGD codes can be completed at processing center.)

D. Allocate to the appropriate enterprise number (ENT. number)

E. Enter total number of units inventoried

F. Enter Q Code (Q CD) number for the description of the units

1. 1 Head
   2 Bushel
   3 Tons
   4 Dozen
   5 Gallons
   6 Bales
   7 Acres
   8 Hours
   9 Days

G. Enter total pounds inventoried

(NOTE: Hash line on form indicates a decimal point.)

H. Enter total dollar amount inventoried

VII. Form 1.6--Inventory of feed, stored and growing crops, and supplies

A. Complete beginning and ending inventory using *Oklahoma Young Farmer Record Book* Form 3.7

B. Complete ATIGD codes, if necessary

(NOTE: IGD codes can be completed at processing center if a complete description is given.)

C. Allocate to the appropriate enterprise number (ENT. number), if applicable

D. Enter total number of units inventoried, if applicable

E. Enter Q Code (Q CD) number for description of the units

1. 1 Head
   2 Bushel
   3 Tons
   4 Dozen
   5 Gallons
   6 Bales
   7 Acres
   8 Hours
   9 Days

F. Enter total pounds inventoried, if applicable

G. Enter total dollar amounts

ASSIGNMENT SHEET #4

VIII. Form 1.7--Inventory of credit accounts and internal transfer report

A. Inventory of credit accounts

1. Complete beginning and ending inventory of accounts receivable, accounts payable, accrued interest, notes and mortgages using forms from Section 4 of the *Oklahoma Young Farmer Record Book*

   (NOTE: Accrued interest may be included as part of a short term payment or as a separate item.)

2. Complete the ATIGD code, if necessary

3. Allocate to the appropriate enterprise number, if applicable

4. Enter the total dollar amount from each form for the beginning and ending of the year

B. Internal transfer report

1. Internal transfers are used to transfer an item from one enterprise to another without involving an actual flow of cash

   Example: Transfer of grain from a corn enterprise to a cattle feeding enterprise

   (NOTE: Information needed may be obtained from *Oklahoma Young Farmer Record Book* Forms 1.6, 1.6A, and 1.6B for income and/or Forms 2.6, 2.6A, and 2.6B for expenses.)

2. Complete ATIGD codes

   (NOTE: Internal transfers are used only in the enterprise section and are reported always by using the Account code (A) = 4. The specific type or category of the internal transfer is reported by using the appropriate TI code.)

3. Enter the appropriate enterprise number (ENT number) the income or expense is to be added to

4. Enter the appropriate enterprise number (ENT number the income or expense is to be subtracted from

5. Enter acres, if applicable

6. Enter total number of units to be transferred, if applicable

7. Enter Q code (QCD) number for description of the units

   a. 1 Head
      2 Bushels
      3 Tons
      4 Dozen
      5 Gallons
      6 Bales
      7 Acres
      8 Hours
      9 Days

ASSIGNMENT SHEET #4

8. Enter price per unit, if applicable
9. Enter pounds, if applicable
10. Enter total dollar amount to be transferred

Example:

INTERNAL TRANSFER REPORT

		ADD TO	SUBTRACT FROM							
	ATIGD	ENT Number	ENT Number	DESCRIBE AS NEEDED TO IDENTIFY	ACRES	Hd, Bu, Tns	Q* CD	$ PRICE	POUNDS	$ AMOUNT
1.	4 46	9300	7600	FERT TO COTTON		2	3	130 00		260 00
2.	4 1896	7600	1300	WHT PASTURE RENT						2700 00
3.	4 1882	8100	1100	ALFHAY TO COWS		30	3	80 00		2400 00
	4									
	4									
	4									

* 1 Head 2 Bushels 3 Tons 4 Dozen 5 Gallons 6 Bales 7 Acres 8 Hours 9 Days

A typical internal transfer is shown on Line 1. Fertilizer was purchased for the wheat enterprise, but two tons were used on cotton. The one entry on Line 1 charges the cotton enterprise and credits the wheat enterprise for these two tons.

Line 2 is an example of charging an opportunity cost to the stocker enterprise for raised wheat pasture. Wheat pasture rent charged for grazing 100-400 lb stockers for three months was $2.25 per cwt. per month. The one entry on line 2 credits the wheat enterprise for raised wheat crop pasture and charges the stocker enterprise as a raised hay and forage expense.

The example on Line 3 is for 30 tons of alfalfa hay fed to the cow herd. The one entry on line 3 credits the alfalfa hay enterprise for raised hay sales and charges the cow enterprise for raised hay expense.

(NOTE: Negative results may result in the "subtract from" enterprise if these were no larger totals there to be reduced.)

IX. Form 1.8A and 1.8B--Listing of crop and livestock production

A. Complete livestock production for current year by listing birth, weanings, and deaths from information in Section S-Supplemental Forms

1. Complete ATIGD code, if necessary
2. Allocate to the appropriate enterprise number (ENT. number)
3. Complete description, if applicable

ASSIGNMENT SHEET #4

4. Enter total number of units (Head)
5. Enter Q Code (Q CD), if necessary (1-Head)
6. Enter total pounds
7. Enter total dollar amount, if appropriate

B. Complete crop and hay harvested, and other production for current year from information in Section S-Supplemental Records

1. Complete ATIGD code, if necessary
2. Allocate to the appropriate enterprise number (ENT number)
3. Complete description, if applicable
4. Enter total acres harvested for each crop or hay enterprise and all other acres farmed

   (NOTE: Hash line indicates a decimal point. The sum of the acres column should equal total acres of land operated this year. See Form 1.1.)

5. Enter total units produced

   Example: Wheat harvested 500 acres, 10,000 bushels

6. Enter Q Code (Q CD) number for description of the units

   1. 1 Head
      2 Bushels
      3 Tons
      4 Dozen
      5 Gallons
      6 Bales
      7 Acres
      8 Hours
      9 Days

7. Enter total pounds produced, if applicable

   (NOTE: Hash line indicates a decimal point.)

8. Enter total dollar amount produced

   (NOTE: If there was no value of production, enter 0.00 for amount.)

X. Forms 1.9 and 1.10--Year-end enterprise allocation form for income and for expenses

(NOTE: Cooperator may use Form 1.9 and 1.10 or 1.11 for allocation of income and expenses from the overhead enterprise to the appropriate enterprises. Do not allocate any amounts previously allocated to an enterprise on Forms 1.2 or 1.3. Information may be obtained from *Oklahoma Young Farmer Record Book* Forms 1.6, 1.6A and 1.6B for income and Form 2.6, 2.6A and 2.6B for expenses.)

ASSIGNMENT SHEET #4

A. Enter appropriate enterprise name and number

B. Complete ATIGD code, if necessary

(NOTE: Account code is 4 for internal transfer.)

C. Complete description, if applicable

D. Enter units, Q Code, pounds and dollar amount to be allocated to the appropriate enterprise

(NOTE: The sum of the units, pounds, and amounts allocated cannot exceed the totals entered on Forms 1.2 and 1.3 for the total whole farm. Any amount not allocated will remain in the overhead enterprise. *Any amounts allocated on Forms 1.2 and 1.3 should not be entered on these forms.*)

XI. Form 1.11--Year-end enterprise percent allocation form

(NOTE: Cooperator may use Form 1.11 for allocation of income and expenses from the overhead enterprise to the appropriate enterprises. Depreciation and operator labor can also be allocated. Do not allocate any amounts previously allocated to an enterprise on Forms 1.2, 1.3, 1.9 or 1.10.)

A. General instructions include:

1. A--Account code is always 4

2. TI--Transaction and item code must correspond to line item in overhead enterprise (Forms 1.2 and 1.3)

   a. Use ATIGD-4411 for hired labor

   b. Use ATIGD-4410 for operator labor and unpaid family labor

   c. Use ATIGD-496 for livestock depreciation allocation

   (NOTE: Find the total depreciation for year from *Oklahoma Young Farmer Record Book* Form 3.4.)

   d. Use ATIGD-497 for machinery and equipment depreciation allocation

   (NOTE: Total depreciation for the year from *Oklahoma Young Farmer Record Book* Form 3.2)

   e. Use ATIGD-498 for building and improvement depreciation allocation

   (NOTE: Total depreciation for year from *Oklahoma Young Farmer Record Book* Form 3.5.)

ASSIGNMENT SHEET #4

3. Limit the total percentages for all enterprises for an IT item to less than 100 percent

   (NOTE: Do not allocate items already allocated on Forms 1.2, 1.3, 1.9 and 1.10.)

4. 1st-5th ENT--Is the enterprise number from Form 1.1

5. 1st-5th%--Is the percentage of the total amount to be allocated to that enterprise

   (NOTE: Values may range from 00.1 to 99.9. To allocate 100%, use Forms 1.2 or 1.3.)

6. Units--Total number of units to be allocated

7. Q Code (Q CD)--Description of units

   1. 1 Head
      2 Bushels
      3 Tons
      4 Dozen
      5 Gallons
      6 Bales
      7 Acres
      8 Hours
      9 Days

8. Pounds--Total pounds to be allocated

   (NOTE: Hash line indicates a decimal point.)

9. Amount--Total dollar amount to be allocated

   (NOTE: Total number of units, pounds, or dollar amount cannot exceed totals entered on Forms 1.2 and 1.3. If amount column is blank, the computer will allocate everything from the overhead enterprise. If a dollar amount is entered, only that amount will be allocated.)

10. If a TI item is to be allocated to more than five enterprises, use more than one line. Code the same ATIG, total units pounds, and dollars on each line

B. Options and their requirements

1. Allocation of depreciation

   a. ATIGD codes of 496, 497, or 498

   b. Enter desired percentages for each enterprise

   c. Units and pounds should be left blank

   d. It must have a positive dollar amount

      (NOTE: If total percentage is less than 100, the remaining percentage amount will be allocated to overhead.)

ASSIGNMENT SHEET #4

2. Allocation of operator labor and unpaid family labor
    a. ATIG code of 4410
    b. Enter desired percentage for each enterprise
    c. Enter total hours and total dollar amount

       (NOTE: If total percentage is less than 100, the remaining percentage amount will be allocated to overhead. If total hours and total dollar amount are blank, default values will be used.)

3. Allocation of overhead income and expense items

   (NOTE: Do not allocate items previously allocated on Forms 1.2, 1.3, 1.9, or 1.10.)

    a. Allocate by percentage allocation with no amount

       (NOTE: This option allocates total amount in overhead.)

    b. Allocate by percentage allocation with a positive dollar amount

       (NOTE: This option allocates a specific amount.)

ASSIGNMENT SHEET #4

OKLAHOMA YOUNG FARMER RECORD BOOK
COMPUTERIZED YEAR-END ANALYSIS
INPUT FORMS

1. NAME ____________________________

2. ADDRESS ____________________________

____

3. ZIP CODE __________ COUNTY ______________

4. ENTERPRISES

ENT Number	ENT Units	ENT Description

5. FARM NUMBER (to be assigned) __________

6. YEAR ______ NO. OF PREVIOUS REPORTS ___

7. The percentage of undivided utilities that should be allocated to the farm. ______________%

8. The percentage of undivided auto expense that should be allocated to the farm. __________%

9. Total months of operator labor this year.
__________ months

10. Total months of unpaid family labor this year. __________ months

11. Total months of hired labor paid this year.
__________ months

12. Total acres of land operated this year.
__________ acres

13. Advisor's signature ______________________
representing ______________________

ASSIGNMENT SHEET #4

CASH FLOW SUMMARY–INCOME

(Use Form 6.2)

FORM 1.2

LINE NO.	ATIGD	ENT. NUMBER	DESCRIPTION	UNITS	Q* CD	POUNDS	AMOUNT	
							$	¢
01	01___		Crop Sales:					
02	01___		Crop Sales:					
03	01___		Crop Sales:					
04	01___		Crop Sales:					
05	036___		Government Payments					
06	032___		Custom Work					
07	035___		Dividends, Refunds, Resales					
08	020___		Cash Rent, Other					
09	02___		Livestock Products:					
10	02___		Livestock Products:					
11	039___		Misc. Income					
12	039___		Misc. Income					
13	01___		Non-Breeding Livestock Raised:					
14	01___		Non-Breeding Livestock Raised:					
15	06___		Resale Livestock:					
16	06___		Resale Livestock:					
17	08___		Breeding Livestock Sales:					
18	08___		Breeding Livestock Sales:					
19	087___		Machinery, Equipment, Building Sales					
20								
21	001___		Non-Farm Receipts					

* 1 Head 2 Bushels 3 Tons 4 Dozen 5 Gallons 6 Bales 7 Acres 8 Hours 9 Days

ASSIGNMENT SHEET #4

CASH FLOW SUMMARY–EXPENSE

(Use Form 6.2)

FORM 1.3

LINE NO.	ATIGD	ENT. NUMBER	DESCRIPTION	UNITS	Q* CD	POUNDS	AMOUNT	
							$	¢
25	041 _		Hired Labor					
26	042 _		Repairs					
27	043 _		Interest					
28	044 _		Feed					
29	045 _		Seed, Plants, Other					
30	046 _		Fertilizer, Lime, Chemicals					
31	047 _		Machine Hire					
32	048 _		Supplies					
33	049 _		Breeding Fees					
34	050 _		Miscellaneous Expenses					
35	051 _		Vet. Medicine					
36	052 _		Fuel and Oil					
37	053 _		Storage					
38	054 _		Taxes					
39	055 _		Insurance					
40	056 _		Utilities					
41	057 _		Cash Rent					
42	058 _		Freight, Trucking					
43	059 _		Conservation Expense					
44	07 __		Livestock Purchased for Resale:					
45	07 __		Livestock Purchased for Resale:					
46	09 __		Breeding Stock Purchases:					
47	09 __		Breeding Stock Purchases:					
48	09 __		Machinery and Equipment Purchased					
49	09 __		Land and Building Improvement					
50								
51	005 _		Non-Farm Expenses and Investments					
52	005 _		Family Living					

* 1 Head 2 Bushels 3 Tons 4 Dozen 5 Gallons 6 Bales 7 Acres 8 Hours 9 Days

ASSIGNMENT SHEET #4
INVENTORY

FORM 1.4

	BEGINNING OF YEAR 19 ____						ENDING OF YEAR 19 ____					
DESCRIPTION	ATIGD	ENT Number	UNITS	Q* CD	AMOUNT		ATIGD	ENT Number	UNITS	Q* CD	AMOUNT	
					$	¢					$	¢
Checking Account Balance	510 ___						510 ___					
Savings Account Balance	510 ___						510 ___					
Cash on Hand	510 ___						510 ___					
Personal Assets	505 ___						505 ___					
Personal Assets	505 ___						505 ___					
Machinery and Equipment	597 ___						597 ___					
(Form 3.2, Col. 23-26)												
Buildings and Improvements	598 ___						598 ___					
(Form 3.5, Line 11)												
Land	599 ___						599 ___					
(Form 3.5, Line 12)												

1 Head 2 Bushels 3 Tons 4 Dozen 5 Gallons 6 Bales 7 Acres 8 Hours 9 Days

ASSIGNMENT SHEET #4

INVENTORY OF LIVESTOCK

FORM 1.5

			BEGINNING OF YEAR 19 ______							ENDING OF YEAR 19 ______						
	LINE NO.	DESCRIPTION	ATIGD	ENT Number	UNITS	Q* CD	POUNDS	AMOUNT $	¢	ATIGD	ENT Number	UNITS	Q* CD	POUNDS	AMOUNT $	¢
SWINE	01	Purch. Breeding	5948			1				5948			1			
	02	Rsd. Breeding-Sows	5148			1				5148			1			
	03	-Gilts	5142			1				5142			1			
	04	-Boars	5147			1				5147			1			
	06	Hogs	5145			1				5145			1			
	07	Pigs	5145			1				5145			1			
	08	Gilts	5142			1				5142			1			
	09	Barrows	5143			1				5143			1			
BEEF	12	Purch. Breeding	5918			1				5918			1			
	13	Rsd. Breeding-Cows	5117			1				5117			1			
	14	-Heifers	5117			1				5117			1			
	15	-Bulls	5118			1				5118			1			
	17	Heifers	5112			1				5112			1			
	18	Bulls	5111			1				5111			1			
	19	Steers	5113			1				5113			1			
	20	Calves	511			1				511			1			
DAIRY	23	Purch. Breeding	5928			1				5928			1			
	24	Rsd. Breeding-Cows	5128			1				5128			1			
	25	Bred Heifers	5128			1				5128			1			
	26	Open Heifers	5128			1				5128			1			
	27	-Bulls	5127			1				5127			1			
	29	Heifers	5122			1				5122			1			
	30	Bulls	5121			1				5121			1			
	31	Steers	5123			1				5123			1			
	32	Calves	512			1				512			1			
OTHER	35	Other Breeding	5			1				5			1			
	37	Other Non-Breeding	5			1				5			1		15	

* 1 Head 2 Bushels 3 Tons 4 Dozen 5 Gallons 6 Bales 7 Acres 8 Hours 9 Days

ASSIGNMENT SHEET #4

INVENTORY OF FEED, STORED AND GROWING CROPS, AND SUPPLIES

FORM 1.6

▨	LINE NO.	DESCRIPTION	BEGINNING OF YEAR 19 ____							ENDING OF YEAR 19 ____						
			ATIGD	ENT Number	UNITS	Q* CD	POUNDS	AMOUNT		ATIGD	ENT Number	UNITS	Q* CD	POUNDS	AMOUNT	
								$	¢						$	¢
PURCHASED FEEDS	01	Purchased Feed	544							544						
	02	Supplement & Minerals	544							544						
	03		544							544						
	04		544							544						
STORED CROPS	06	Wheat	5176							5176						
	07	Grain Sorghum	5173							5173						
	08	Soybeans	5198							5198						
	09	Cotton	5193							5193						
	10		51							51						
	11	Silage	5445							5445						
	12		5							5						
	13	Hay	518							518						
	14		5							5						
	15	Straw	5188							5188						
CROP	17	Growing Crop-	5							5						
	18	Growing Crop-	5							5						
SUPPLIES	20	Seeds	545							545						
	21		5							5						
	22	Stored Fertilizer	546							546						
	23		5							5						
	24	Chemicals	5466							5466						
	25		5							5						
	26	Twine, Etc.	548							548						
	27	Fuel	552							552						
	28		5							5						
	29	Oil	5527							5527						
	30	Grease	5526							5526						
	31	Vet. Supplies	5515							5515						
	32		5							5						
	33	Bedding	548							548						
	34	Other Supplies	548							548						
OTHER	36		5							5						
	37		5							5						

* 1 Head 2 Bushels 3 Tons 4 Dozen 5 Gallons 6 Bales 7 Acres 8 Hours 9 Days

ASSIGNMENT SHEET #4
CREDIT ACCOUNTS

FORM 1.7

	BEGINNING OF YEAR 19 ____				ENDING OF YEAR 19 ____			
DESCRIPTION	ATIGD	ENT Number	AMOUNT		ATIGD	ENT Number	AMOUNT	
			$	¢			$	¢
Open Accounts Receivable (Form 4.1)	1061				1061			
Notes and Mortgages Receivable (Form 4.2)	1069				1069			
Open Accounts Payable (Form 4.3)	1021				1021			
Short Term Single Payment Note (Form 4.4)	1021				1021			
Credit Lines and Short Term Multipayment Notes (Form 4.5)	1021				1021			
Accrued Interest	143				143			
Intermediate Term Multipayment Note--portion of payments due this year (Form 4.6)	1021				1021			
Intermediate Term Multipayment Note--portion of payments due after this year (Form 4.6)	1024				1024			
Long Term Multipayment Note--portion of payments due this year (Form 4.6)	1021				1021			
Long Term Multipayment Note-- portion of payments due after this year (Form 4.6)	1029				1029			

INTERNAL TRANSFER REPORT

	ADD TO	SUBT FROM								
ATIGD	ENT Number	ENT Number	DESCRIBE AS NEEDED TO IDENTIFY	ACRES	Hd, Bu, Tns	Q* CD	$ PRICE	POUNDS	AMOUNT	
									$	¢
4										
4										
4										
4										
4										
4										

* 1 Head 2 Bushels 3 Tons 4 Dozen 5 Gallons 6 Bales 7 Acres 8 Hours 9 Days

ASSIGNMENT SHEET #4

LISTING OF LIVESTOCK PRODUCTION

FORM 1.8A

▨	LINE NO.	ATIGD	ENT Number	DESCRIPTION	UNITS	Q* CD	POUNDS	AMOUNT	
								$	¢
BIRTHS	01	711		Beef					
	02	712		Dairy					
	03	713		Sheep					
	04	714		Swine					
	05	71		Other--					
	06	71		Other--					
WEANINGS	07	811		Beef					
	08	812		Dairy					
	09	813		Sheep					
	10	814		Swine					
	11	81		Other--					
	12	81		Other--					
DEATHS	13	911		Beef					
	14	912		Dairy					
	15	913		Sheep					
	16	914		Swine					
	17	91		Other--					
	18	91		Other--					

* 1 Head
2 Bushels
3 Tons
4 Dozen
5 Gallons
6 Bales
7 Acres
8 Hours
9 Days

ASSIGNMENT SHEET #4

LISTING OF CROP PRODUCTION

FORM 1.8B

	LINE NO.	ATIGD	ENT Number	DESCRIPTION	ACRES	UNITS	Q* CD	POUNDS	AMOUNT	
									$	¢
CROPS	01	81								
	02	81								
	03	81								
	04	81								
	05	81								
	06	81								
HAY	07	818								
	08	818								
	09	818								
	10	818								
	11	818								
	12	818								
OTHER	13	892		Set-aside Cropland						
	14	892		Fallow Cropland						
	15	895		Temporary Pasture						
	16	8966		Permanent Pasture						
	17	8977		Farmstead, Fences, and Roads						
	18	8988		Trees and Waste						
	19									
	20									

* 1 Head
2 Bushels
3 Tons
4 Dozen
5 Gallons
6 Bales
7 Acres
8 Hours
9 Days

ASSIGNMENT SHEET #4

YEAR-END ENTERPRISE ALLOCATION FORM -- INCOME

FORM 1.9

			ENT Name			ENT Number		ENT Name			ENT Number	
LINE NO.	ATIGD	DESCRIPTION	UNITS	Q * CD	POUNDS	AMOUNT		UNITS	Q * CD	POUNDS	AMOUNT	
						$	¢				$	¢
01	41	Crop-										
02	41	Crop-										
03	41	Crop-										
04	41	Crop-										
05	436	Government Payments										
06	432	Custom Work										
07	435	Dividends, Refunds, Resales										
08	420	Cash Rent, Other										
09	42	Livestock Products:										
10	42	Livestock Products:										
11	439	Misc. Income										
12	439	Misc. Income										
13	41	Non-Breeding Livestock Raised:										
14	41	Non-Breeding Livestock Raised:										
15	46	Resale Livestock:										
16	46	Resale Livestock:										
17	48	Breeding Livestock Sales:										
18	48	Breeding Livestock Sales:										
19	487	Machinery, Equipment, Building Sales										
20	4											
21	4											

*			
	1 Head	4 Dozen	7 Acres
	2 Bushels	5 Gallons	8 Hours
	3 Tons	6 Bales	9 Days

ASSIGNMENT SHEET #4

YEAR-END ENTERPRISE ALLOCATION FORM – EXPENSE

FORM 1.10

			ENT Name		ENT Number			ENT Name		ENT Number		
LINE NO.	ATIGD	DESCRIPTION	UNITS	Q* CD	POUNDS	AMOUNT $	AMOUNT ¢	UNITS	Q* CD	POUNDS	AMOUNT $	AMOUNT ¢
25	441	Hired Labor										
26	442	Repairs										
27	443	Interest										
28	444	Feed										
29	445	Seed, Plants, Other										
30	446	Fertilizer, Lime, Chemicals										
31	447	Machine Hire										
32	448	Supplies										
33	449	Breeding Fees										
34	450	Miscellaneous Expenses										
35	451	Vet. Medicine										
36	452	Fuel and Oil										
37	453	Storage										
38	454	Taxes										
39	455	Insurance										
40	456	Utilities										
41	457	Cash Rent										
42	458	Freight, Trucking										
43	459	Conservation Expense										
44	47	Livestock Purchased for Resale:										
45	47	Livestock Purchased for Resale:										
46	49	Breeding Stock Purchases:										
47	49	Breeding Stock Purchases:										
48	49	Machinery and Equipment Purchased										
49	49	Land and Building Improvement										
50	4											

* 1 Head 2 Bushels 3 Tons 4 Dozen 5 Gallons 6 Bales 7 Acres 8 Hours 9 Days

ASSIGNMENT SHEET #4
YEAR-END ENTERPRISE PERCENT ALLOCATION FORM

FORM 1.11A

USE FOR YEAR-END REPORTING OF FINAL ENTERPRISE ALLOCATIONS

Month	Day	Code	Allocate To Ent. % of Units, Pounds, and Dollars										Quantity			AMOUNT	
		A T I G D	1st Ent	1st Ent %	2nd Ent	2nd Ent %	3rd Ent	3rd Ent %	4th Ent	4th Ent %	5th Ent	5th Ent %	No. of Units Hd, Bu, Tns	Q* CD	Total Wt. Pounds	$	¢
12	31	496-Lvst. Deprec															
12	31	497-Mach.Deprec															
12	31	498-Bldg. Deprec															
12	31	4410-Oper. Labor															
12	31	4410-Unpaid Family Labor															
12	31	4															
12	31	4															
12	31	4															
12	31	4															
12	31	4															
12	31	4															
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12	31	4															
12	31	4															
12	31	4															

1 Head 2 Bushels 3 Tons 4 Dozen 5 Gallons 6 Bales 7 Acres 8 Hours 9 Days

ASSIGNMENT SHEET #4
YEAR-END ENTERPRISE PERCENT ALLOCATION FORM

FORM 1.11B

USE FOR YEAR-END REPORTING OF FINAL ENTERPRISE ALLOCATIONS

Month	Day	Code	Allocate To Ent. % of Units, Pounds, and Dollars										Quantity			AMOUNT	
		A T I G D	1st Ent	1st Ent %	2nd Ent	2nd Ent %	3rd Ent	3rd Ent %	4th Ent	4th Ent %	5th Ent	5th Ent %	No. of Units Hd, Bu, Tns	Q* CD	Total Wt. Pounds	$	¢
12	31	4															
12	31	4															
12	31	4															
12	31	4															
12	31	4															
12	31	4															
12	31	4															
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12	31	4															
12	31	4															

* 1 Head 2 Bushels 3 Tons 4 Dozen 5 Gallons 6 Bales 7 Acres 8 Hours 9 Days

WHOLE FARM AND DETAILED ENTERPRISE ANALYSIS
UNIT IV

ASSIGNMENT SHEET #5--COMPLETE A LIVESTOCK AND CROP ENTERPRISE ANALYSIS

NAME ______________________________ SCORE ____________

Whole farm analysis information can be applied to individual enterprises. In fact, cooperators who specialize in only one product have only one enterprise. Where there is more than one major enterprise, it is desirable to make some analysis to determine efficiency and obtain data for future farm planning. Summarizing data for future planning is the most important purpose of enterprise analysis.

Enterprise analysis is an accrual record of all income and expenses attributed to each of the designated enterprises during the current year, whether they are paid or not, and whether they were external transactions or internal transfers within the farm business.

The enterprise analysis form is organized into the following sub-groups:

A. Enterprise summary

1. *Livestock/crop sales* can include these items depending on the type of enterprise:
    a. Raised sales
    b. Product sales
    c. Sales of items purchased for resale
    d. Sale of capital assets
    e. Grain and forage fed
    f. Ending operating inventory
    g. Death or casualty loss

2. *Livestock/crop gross purchases* can include these items depending on the type of enterprise:
    a. Purchases of items for resale
    b. Purchases of capital assets
    c. Births
    d. Beginning operating inventory

    (NOTE: Operating inventory is the value of livestock or crop production currently on hand.)

3. *Livestock/crop net sale gain*--Is calculated by subtracting livestock/crop gross purchases from livestock/crop sales

4. *Total other income*--Includes income allocated to an enterprise but not included in sales or gross purchases and net inventory change of products held for sale

    Examples: Patronage refunds; supplies sold; insurance refunds

ASSIGNMENT SHEET #5

5. *Total gross income*--Is the sum of Livestock/Crop net sale gain and total other income

6. *Total cash expenses*--Includes current operating expenses allocated to the enterprise and net inventory change of feed and supplies on hand

   Examples: Feed; hired labor; veterinary medicine; freight or trucking

7. *Net Returns*--Is total gross income minus Total cash expenses

8. *Dollars/Cwt. produced*--Is calculated by dividing the dollar amount by the total hundredweights of livestock produced

9. *Dollars/Unit harvested*--Is calculated by dividing the dollar amount by the total units of the harvested

   (NOTE: The accuracy of cwt. produced will depend upon accurate reporting of pounds on the Livestock Production Summary form. Several items influence the accuracy of this number of pounds. The number of pounds of livestock purchased for resale, capital assets purchased, births, beginning and ending inventories, raised sales, product sales, sales of livestock purchased for resale, sales of capital assets, grain and forage fed, and death losses. Total units of a crop harvested may be obtained from the Crop Production Summary forms.)

10. *Dollars/Head*--Is calculated by dividing the dollar amount by total head of livestock sold during the year

11. *Dollars/Harvested acre*--Is calculated by dividing the dollar amount by the total harvested acres for the enterprise

B. Enterprise analysis factors--Include management factors, production rates, and other analysis information

   Examples: Feed costs; non-feed costs; percent death loss; gross income/$100 feed; units harvested/acre

C. Returns summary--Calculates a percent return on investment for the enterprise

1. *Total operating income*--Includes cash income from the Livestock/Crops gross sales and total other income

2. *Operating inventory charge*--Is the difference between opening and closing operating inventory for the enterprise

3. *Total operating expenses*--Include cash expenses for Livestock/Crop gross purchases plus Total cash expenses plus the value of ending feed inventory

4. *Returns to labor, capital, machinery and management*--Is the result of Operating income + Operating inventory change - Operating expenses

ASSIGNMENT SHEET #5

5. *Depreciation*--Is the total depreciation cost allocated to the enterprise

6. *Return to labor, capital, and management*--Is return to labor, capital, machinery and management minus Depreciation expense

7. *Unpaid operator and family labor*--Is the number of hours of unpaid labor allocated to the enterprise multiplied by an opportunity cost for that labor

   (NOTE: The opportunity cost of labor is $4.00 per hour.)

8. *Return to capital and management*--Return to labor, capital and management minus Unpaid labor

9. *Interest on operating investment*--Is an opportunity cost of capital invested

   (NOTE: Opportunity cost of capital is an interest charge of 13 percent of the average capital minus actual interest paid.)

10. *Return to management*--Is return to capital and management less interest on operating investment

11. *Rate of return on investment*--Is calculated by dividing return to capital and management plus interest paid by average capital

    (NOTE: Average capital is calculated as follows:

    (Beginning + Ending Operating Inventory)/2 + (Beginning + Ending Product Inventory)/2 + (Beginning + Ending Expense Inventory)/2 + (Beginning + Ending Fixed Asset Inventory)/2 + (Operating expenses x .6) - (Operating income x .2)

    Using the information on the following page, complete an enterprise analysis for a beef fattening enterprise and a wheat enterprise.

ASSIGNMENT SHEET #5

BEEF FATTENING ENTERPRISE

Income:	
Sale of feeders purchased for resale	$595,350.00
Ending operating inventory	166,316.80
Purchase of feeders for resale	249,687.50
Beginning operating inventory	164,220.00
Patronage refunds	346.50
Miscellaneous income	70.90
Product inventory change	0.00
Expenses:	
Hired labor	9,922.09
Repairs	1,655.10
Interest	15,600.00
Feed purchased	250,848.00
Beginning feed inventory	15,000.00
Ending feed inventory	20,000.00
Miscellaneous	2,184.00
Veterinary Medicine	2,400.00
Freight or Trucking	8,457.50
Other information:	
Total head handled during the year	1,045 head
Death loss	15 head
Total head sold during the year	810 head
Total pounds net increase	482,400 pounds
Depreciation allocated to beef fattening	$ 646.51
Unpaid operator and family labor	$ 7,290.00
Beginning fixed asset inventory	$30,500.00
Ending fixed asset inventory	$31,750.00

WHEAT ENTERPRISE

Income:	
Sale of raised wheat	$29,700.00
Sale of straw hay	1,400.00
Ending operating inventory	20,250.00
Beginning operating inventory	20,250.00
Product inventory change	0.00
Expenses:	
Hired labor	2,266.47
Seeds and plants	902.34
Fertilizer	11,500.00
Machine hire	2,250.00
Supplies	225.00
Fuel	860.96
Cash rent	5,625.00
Operating expense inventory change	0.00
Other information:	
Total acres harvested	225 acres
Total bushels harvested	9,000 bushels
Depreciation allocated to wheat	$ 1,039.02
Unpaid operator and family labor	150 hours
Beginning fixed asset inventory	$80,250.00
Ending fixed asset inventory	$79,500.00

ASSIGNMENT SHEET #5

______________ LIVESTOCK ENTERPRISE ANALYSIS

ENTERPRISE SUMMARY	$	$	$/ CWT. PROD. (______)	$/ HEAD (______)
Sales	______			
Plus: Ending operating inventory	______			
Gives: Livestock gross sales		______	______	______
Purchases	______			
Plus: Opening operating inventory	______			
Gives: Livestock gross purchases		______	______	______
Livestock net sale gain		______	______	______
Plus: Total other income		______		
Gives: Total gross income		______	______	______
Expenses:				
______	______		______	______
______	______		______	______
______	______		______	______
______	______		______	______
______	______		______	______
______	______		______	______
______	______		______	______
______	______		______	______
Total cash expenses		______	______	______
Net Returns		______	______	______

ENTERPRISE ANALYSIS FACTORS			
Feed costs	______	______	______
Non-feed costs	______	______	______
% Death loss	______	______	______
Gross income/$100 feed	______	______	______
______	______	______	______
______	______	______	______

RETURNS SUMMARY	$	$
Total operating income	______	
Plus: Operating inventory change	______	

ASSIGNMENT SHEET #5

RETURNS SUMMARY	$	$
Less: Total operating expenses	______	
Gives: Returns to labor, capital, machinery and management		______
Less: Depreciation	______	
Gives: Return to labor, capital and management		______
Less: Unpaid operator and family labor	______	
Gives: Return to capital and management	______	______
Less: Interest on operating investment	______	
Gives: Return to management		______

Return to capital and management	______	
Plus: Interest paid	______	
Divided by: Average capital	______	
Gives: Rate of return on investment		______

ASSIGNMENT SHEET #5

________________ CROP ENTERPRISE ANALYSIS

ENTERPRISE SUMMARY	$	$	$/ UNIT HVST. (______)	$/ ACRE (______)
Sales	______			
Plus: Ending operating inventory	______			
Gives: Crop gross sales		______	______	______
Purchases	______			
Plus: Opening operating inventory	______			
Gives: Crop gross purchases		______	______	______
Crop net sale gain		______	______	______
Plus: Total other income		______		
Gives: Total gross income		______	______	______
Expenses:				
________________	______		______	______
________________	______		______	______
________________	______		______	______
________________	______		______	______
________________	______		______	______
________________	______		______	______
________________	______		______	______
________________	______		______	______
Total cash expenses		______	______	______
Net Returns		______	______	______

ENTERPRISE ANALYSIS FACTORS	
Units harvested	______
Harvested yield per acre	______
________________	______
________________	______

RETURNS SUMMARY	$	$
Total operating income	______	
Plus: Operating inventory change	______	
Less: Total operating expenses	______	

ASSIGNMENT SHEET #5

RETURNS SUMMARY	$	$
Gives: Returns to labor, capital, machinery and management		______
Less: Depreciation	______	
Gives: Return to labor, capital and management		______
Less: Unpaid operator and family labor	______	
Gives: Return to capital and management		______
Less: Interest on operating investment	______	
Gives: Return to management		______

Return to capital and management	______	
Plus: Interest paid	______	
Divided by: Average capital	______	
Gives: Rate of return on investment		______

WHOLE FARM AND DETAILED ENTERPRISE ANALYSIS
UNIT IV

ANSWERS TO ASSIGNMENT SHEETS

Assignment Sheet #1--See Whole Farm Business Analysis form on following pages

Assignment Sheet #2--See Measures of Performance form on following pages

Assignment Sheet #3--Evaluated to satisfaction of instructor

Assignment Sheet #4--Evaluated to satisfaction of instructor

Assignment Sheet #5--See Livestock and Crop Enterprise Analysis forms on following pages

ANSWERS TO ASSIGNMENT SHEET #1

FORM 6.6

WHOLE FARM BUSINESS ANALYSIS FOR 19____

RESOURCES		
LABOR	**Hours**	**Value**
1. Unpaid Family Labor (form S-12 or estimate)	600	$2,100⁰⁰
2. Operator's Labor (form S-12 or estimate)	2400	8,400⁰⁰
3. Total Unpaid Labor (add line 1 + line 2)	3000	10,500⁰⁰
4. Hired Labor (form 6.2 or form S-12)	2125	8,500⁰⁰
5. Total Labor Utilized (add line 3 + line 4)	5125	19,000⁰⁰
A. MAN YEARS TOTAL LABOR (line 5 ÷ 2000)	2.56 Yrs.	
B. MAN YEARS UNPAID LABOR (line 3 ÷ 2000)	1.50 Yrs.	
CAPITAL		**Value**
6. Average Farm Assets (form 6.3 line 34) (Beginning + Ending) ÷ 2	$ 365,000⁰⁰	
7. Average Farm Net Worth (form 6.4 line 68) (Beginning + Ending) ÷ 2	$ 195,250⁰⁰	
8. Opportunity Rate of Return on Capital (estimate)	8.0 %	
9. Opportunity Cost of Total Capital (line 6 X line 8)		$28,400⁰⁰
10. Opportunity Cost of Equity Capital (line 7 X line 8)		$15,620⁰⁰
FARM NET WORTH CHANGE		
C. BOOK VALUE (form 6.4 line 68 col. 9)		25,000⁰⁰
D. CURRENT VALUE (form 6.4 line 68 col. 12)		33,000⁰⁰
INTEREST EXPENSE		
11. Cash Interest Expense (form 6.2 line 27)	$15,000⁰⁰	
12. Accrued Unpaid Interest Adjustment (form 6.4 line 57 col. 9)	$ 2,075⁰⁰	
13. Accrued Interest Expense (add line 11 + line 12)		$17,075⁰⁰

RETURN TO RESOURCES		
		Value
E. NET FARM INCOME (form 6.5 line G)		$27,000⁰⁰
14. Accrued Interest Expense (line 13)	$17,075⁰⁰	
F. RETURN TO UNPAID LABOR, TOTAL CAPITAL, AND MANAGEMENT (add line E + line 14)		$ 44,075⁰⁰
15. Opportunity Cost of Total Capital (line 9)	$28,400⁰⁰	
G. RETURN TO UNPAID LABOR AND MANAGEMENT (line F minus line 15)		$15,675⁰⁰
16. Opportunity Cost of Total Capital (line 9)	$28,400⁰⁰	
17. Value of Unpaid Family Labor (line 1)	$ 2,100⁰⁰	
H. RETURN TO OPERATOR'S LABOR, TOTAL CAPITAL, AND MANAGEMENT (line G plus line 16 minus line 17)		$41,975⁰⁰
18. Value of Operator's Labor (line 2)	$ 8,400⁰⁰	
I. RETURN TO TOTAL CAPITAL AND MANAGEMENT (line H minus line 18)		$33,575⁰⁰
19. Opportunity Cost of Total Capital (line 9)	$28,400⁰⁰	
J. RETURN TO MANAGEMENT (line I minus line 19)		$5,175⁰⁰
K. PERCENT RETURN TO TOTAL CAPITAL (line I ÷ line 6) X 100		9.45 %
L. RETURN TO EQUITY CAPITAL AND MANAGEMENT (line E minus line 3)		$ 16,500⁰⁰
M. PERCENT RETURN TO AVERAGE EQUITY CAPITAL (line L ÷ line 7) X 100		17.19 %
N. RETURN PER UNPAID LABOR YEAR (line G ÷ line B)		$10,450⁰⁰

ANSWERS TO ASSIGNMENT SHEET #2

FORM 6.7

MEASURES OF PERFORMANCE FOR 19____

SIZE		
A. CROP ACRES (form S-10 or estimate)	750	
B. PASTURE ACRES (form S-10 or estimate)	200	
C. OTHER ACRES(Farmstead, fences,)(form S-10 or est.)	50	
D. TOTAL ACRES (add line A + line B + line C)		1000 AC
E. AVERAGE FARM ASSETS (form 6.6 line 6)		$355,000.00
Value of Farm Production		
1. Operating Sales (form 6.2 line A)	$217,000.00	
2. Sale of Livestock Purchased for Resale (form 6.2 line 16)	$ 63,000.00	
3. Breeding Livestock Sales (form 6.2 line 18)	$ 3,000.00	
4. Gain or Loss on Sale of Capital Assets Excluding Livestock (forms 3.1 thru 3.5)	$ 0.00	
5. Net Change in Account Receivable (form 6.3, line 13)	$ 1,075.00	
6. Livestock Inventory Change (form 6.5 line 13 col. 3)	$ 30,000.00	
7, Feed, Crops and Supplies Inventory Change (form 6.5 line 14 col. 3)	$ 1,925.00	
8. Less Feed Purchases (form 6.2 line 28)	$ 8,000.00	
9. Less Livestock Purchased for Resale (form 6.2 line 45)	$47,500.00	
10. Less Breeding Livestock Purchases (form 6.5 line 8)	$ 3,000.00	
11. Net Change in Feed and Livestock Accounts Payable (form 6.4 add lines 50 thru 52)	$ 700.00	
12. Value of Home Used Products (form S-1)	$ 0.00	
F. VALUE OF FARM PRODUCTION (add lines 1 thru 11)		$258,200.00
13. Return to Operator's Labor, Total Capital and Management (Adjusted Net Farm Income) (form 6.6 line H)	$41,975.00	
G. VALUE OF TOTAL ANNUAL INPUTS PER FARM (Production Expenses) (line F minus line 13)		$216,225.00
Man-Year		
H. MAN-YEARS TOTAL LABOR (form 6.6 line A)		2.56 Yrs.
I. MAN-YEARS UNPAID LABOR (form 6.6 line B)		1.50 Yrs.

CAPITAL RATIOS		
J. CAPITAL INVESTMENT PER MAN-YEAR (line E ÷ line H)		$138,671.57
INCOME PERFORMANCE		
K. ADJUSTED NET FARM INCOME AS A PERCENTAGE OF VALUE OF PRODUCTION (line 13 ÷ line F) X 100		% 16.25
L. ADJUSTED NET FARM INCOME AS A PERCENTAGE OF INVESTMENT (line 13 ÷ line E) X 100		% 11.82
M. VALUE OF FARM PRODUCTION AS A PERCENTAGE OF INVESTMENT (Rate of Capital Turnover) (line F ÷ line E) X 100		% 72.73
EFFICIENCY RATIOS FOR THE FARM		
N. INVESTMENT PER TOTAL FARM ACRE (line E ÷ line D)		$ 355.00
O. INVESTMENT PER CROP ACRE (line E ÷ line A)		$ 473.33
P. VALUE OF FARM PRODUCTION PER MAN-YEAR TOTAL LABOR (line F ÷ line H)		$ 100,859.37
Q. VALUE OF FARM PRODUCTION PER $100 OF PRODUCTION COSTS line F ÷ (line G ÷ 100)		$ 119.41
14. Machinery and Equipment Investment (form 6.3 line 29) (Beginning + Ending) ÷ 2	$ 62,500.00	
R. MACHINERY AND EQUIPMENT INVESTMENT PER TOTAL FARM ACRE (line 14 ÷ line D)		$ 62.50
S. MACHINERY AND EQUIPMENT INVESTMENT PER CROP ACRE (line 14 ÷ line A)		$ 83.33
T. FUEL COSTS PER TOTAL FARM ACRE (form 6.2 line 36 ÷ line D)		$ 8.25
U. FUEL COSTS PER CROP ACRE (form 6.2 line 36 ÷ line A)		$ 11.00
V. FERTILIZER AND CHEMICAL COSTS PER TOTAL FARM ACRE (form 6.2 line 30 ÷ line D)		$ 15.00
W. FERTILIZER AND CHEMICAL COSTS PER CROP ACRE (form 6.2 line 30 ÷ line A)		$ 20.00

ANSWERS TO ASSIGNMENT SHEET #5

Beef Fattening LIVESTOCK ENTERPRISE ANALYSIS

ENTERPRISE SUMMARY	$	$	$/ CWT. PROD. (4824)	$/ HEAD (810)
Sales	595,350^{00}			
Plus: Ending operating inventory	166,316^{80}			
Gives: Livestock gross sales		761,666^{80}	157^{89}	940^{32}
Purchases	249,687^{50}			
Plus: Opening operating inventory	164,220^{00}			
Gives: Livestock gross purchases		413,907^{50}	85^{80}	510^{99}
Livestock net sale gain		347,759^{30}	72^{09}	429^{33}
Plus: Total other income		417^{40}		
Gives: Total gross income		348,176^{70}	72^{17}	429^{84}
Expenses:				
Hired Labor	9,922^{09}		2^{06}	12^{25}
Repairs	1,655^{12}		^{34}	2^{04}
Interest	15,600^{00}		3^{23}	19^{26}
Feed (Begin. Inv. + Purch. - End. Inv)	245,848^{00}		50^{97}	303^{52}
Misc.	2,184^{00}		^{45}	2^{70}
Vet. Medicine	2,400^{00}		^{50}	2^{96}
Freight/Trucking	8,457^{80}		1^{75}	10^{44}
Total cash expense		286,067^{29}	59^{30}	353^{17}
Net Returns		62,109^{41}	12^{87}	76^{67}

ENTERPRISE ANALYSIS FACTORS	$	$/ CWT. PROD.	$/ HEAD
Feed costs	245,848^{00}	50^{97}	303^{52}
Non-feed costs	40,219^{29}	8^{34}	49^{66}
% Death loss	1.4%		
Gross income/$100 feed	141^{62}		

RETURNS SUMMARY	$	$
Total operating income	595,767^{40}	
Plus: Operating inventory change	2,096^{80}	
Less: Total operating expenses	555,754^{73}	
Gives: Returns to labor, capital, machinery and management		42,109^{41}
Less: Depreciation	646^{51}	
Gives: Return to labor, capital and management		41,462^{90}
Less: Unpaid operator and family labor	7,290^{00}	
Gives: Return to capital and management		34,172^{90}
Less: Interest on operating investment	40,064^{95}	
Gives: Return to management		<-5,892^{95}>

Return to capital and management	34,172^{90}	
Plus: Interest paid	15,600^{00}	
Divided by: Average capital	428,191^{93}	
Gives: Rate of return on investment		11.6%

Note: Average Capital = $[(166{,}316^{80} + 164{,}220^{00})/2] + [(15{,}000^{00} + 20{,}000^{00})/2] + [(30{,}500^{00} + 31{,}750^{00})/2] + (555{,}754^{73} \times .6) - (595{,}767^{40} \times .2)$

ANSWERS TO ASSIGNMENT SHEET #5

Wheat CROP ENTERPRISE ANALYSIS

ENTERPRISE SUMMARY	\$	\$	\$/ UNIT HVST. (9000)	\$/ ACRE (225)
Sales	31,100^{00}			
Plus: Ending operating inventory	20,250^{00}			
Gives: Crop gross sales		51,350^{00}	5^{71}	228^{22}
Purchases	-0-			
Plus: Opening operating inventory	20,250^{00}			
Gives: Crop gross purchases		20,250^{00}	2^{25}	90^{00}
Crop net sale gain		31,100^{00}	3^{46}	138^{22}
Plus: Total other income		-0-		
Gives: Total gross income		31,100^{00}	3^{46}	138^{22}
Expenses:				
Hired Labor	2,266^{47}		^{25}	10^{07}
Seeds + Plants	902^{34}		^{10}	4^{01}
Fertilizer	11,500^{00}		1^{27}	51^{11}
Machine Hire	2,250^{00}		^{25}	10^{00}
Supplies	225^{00}		^{02}	1^{00}
Fuel	860^{96}		^{09}	3^{83}
Cash Rent	5,625^{00}		^{63}	25^{00}
Total cash expense		23,629^{77}	2^{63}	105^{02}
Net Returns		7,470^{23}	^{83}	33^{20}

ENTERPRISE ANALYSIS FACTORS	
Units harvested	9000 bu.
Harvested yield per acre	40.0

RETURNS SUMMARY	\$	\$
Total operating income	31,100^{00}	
Plus: Operating inventory change	-0-	
Less: Total operating expenses	23,629^{77}	
Gives: Returns to labor, capital, machinery and management		7,470^{33}
Less: Depreciation	1,039^{02}	
Gives: Return to labor, capital and management		6,431^{21}
Less: Unpaid operator and family labor	600^{00}	
Gives: Return to capital and management		5,831^{21}
Less: Interest on operating investment	14,050^{77}	
Gives: Return to management		<-8,219^{56}>

Return to capital and management	5,831^{21}	
Plus: Interest paid	-0-	
Divided by: Average capital	108,082^{36}	
Gives: Rate of return on investment		5.3%

Note : Average Capital = $[(20{,}250^{00} + 20{,}250^{00})/2] + [(80{,}250^{00} + 79{,}500^{00})/2] +$
$(23{,}629^{77} \times .6) - (31{,}100^{00} \times .2)$

WHOLE FARM AND DETAILED ENTERPRISE ANALYSIS
UNIT IV

TEST

NAME ______________________________ SCORE ____________

1. Match terms associated with whole farm and detailed enterprise analysis to the correct definitions. Write the correct numbers in the blanks provided.

_____a. Equity determined from net worth statement by adding beginning net worth to the ending net worth and dividing by two

_____b. Tax or cost basis of assets and liabilities, including adjustments and prior depreciation taken

_____c. Cash value of assets based on actual cost or market value less sale expenses

_____d. Costs which do not vary with changes in output

_____e. Costs which change with the level of output

_____f. Sum of fixed and variable costs

_____g. Period of time that is too short to permit quantities of particular resources used to vary

_____h. Period of time that is long enough to change quantities of all resources used

_____i. Economic benefits arising because unit costs either decrease or increase as the size of the business and output are expanded

_____j. System of processing accounting records on an electronic computer

_____k. Written historical record of cash flow showing actual cash income and expenses for a definite period of time

_____l. Assets determined from net worth statement by adding beginning farm assets to ending farm assets and dividing by two

1. Variable costs
2. Book value
3. Long-run
4. Electronic data processing (EDP)
5. Current value
6. Average net worth
7. Short-run
8. Fixed costs
9. Economies of size
10. Total costs
11. Man-year
12. Cash flow summary
13. Net worth statement
14. Average farm assets
15. Income statement

_____m. Summary of cash and non-cash receipts and expenses during a specified period of time

_____n. Statement showing the financial condition of the farm business at a definite point in time

_____o. Average amount of work a person can perform in an average work year using average technology

2. State purposes of whole farm analysis. Write your answer in the blanks below.

a. ______________________________

____

b. ______________________________

____

c. ______________________________

____

d. ______________________________

____

3. Describe resource information needed to complete whole farm analysis. Write your answer in the space below.

a. Labor– ______________________________

____

____

b. Capital-- ______________________________

____

____

c. Farm net worth changes-- ______________________________

____

____

d. Interest expense-- ______________________________

____

____

4. Match the returns to resources to the correct descriptions. Write the correct numbers in the blanks provided.

_____a. Earning's rate of the average farm assets in the farm business

_____b. Return to cooperator's net worth and management ability

_____c. Income accruing to unpaid labor, management, and equity capital

_____d. Balance of adjusted net farm income available to capital and management after an opportunity cost for operator's labor is removed

_____e. Indicator of how efficiently equity capital is being used

_____f. Net farm income plus cash interest expense and an accrued unpaid interest adjustment

_____g. Return to the total capital invested in the operation and operator's labor and management

_____h. Balance representing the return to or management's claim on the remainder of adjusted net farm income

_____i. Measures the effectiveness of the operator and family's unpaid labor and management utilization

_____j. Provides a measure to compare with non-farm family income estimates for the area

1. Return per unpaid labor year
2. Percent return to average equity
3. Percent return to total capital
4. Return to equity capital and management
5. Return to management
6. Net farm income
7. Return to unpaid labor and management
8. Return to total capital and management
9. Return to unpaid labor, total capital, and management
10. Return to operator's labor, total capital, and management

5. Select from the list below measures of performance useful in interpreting whole farm analysis. Mark each correct answer with an "X" in the blanks provided.

_____a. Operating sales

_____b. Size

_____c. Capital ratios

_____d. Income performance

_____e. Assets

_____f. Efficiency ratios

6. Match common ways to measure farm business size to the correct descriptions. Write the correct numbers in the blanks provided.

______a. Measure of non-crop acres used for livestock production

______b. Measure of size in terms of the total operator and family labor performed in the farm business

______c. Measure of space

______d. Measure of size in terms of a labor standard; the average amount of work a person can perform in an average work year using average technology

______e. Measure of production expenses incurred by the farm

______f. Superior measure of size if concerned with crop farms

______g. Measure of average farm investment in a given year

______h. Measure of gross production from the land plus the value added to livestock above purchased feed and purchased livestock

______i. Measure of non-productive acres

______j. Measure of size in terms of the total operator, family, and hired labor performed in the farm business

1. Average farm asset
2. Total acres
3. Man-years
4. Value of total annual inputs per farm
5. Value of farm production
6. Man-years total labor
7. Crop acres
8. Pasture acres
9. Man-years unpaid labor
10. Other acres

7. Discuss ratio of capital investment per man-year. Write your answer in the space below.

____

____

____

____

____

____

____

____

8. Match measures of income performance to the correct descriptions. Write the correct numbers in the blanks provided.

______ a. Return to operator's labor, total capital, and management as a percentage of the average farm capital invested

______ b. Measure of the rate of capital turnover; an indicator of volume of capital used

______ c. Measure of efficiency after adjusting net cash income for changes in inventories, receivables, payables, and a charge for capital

1. Value of farm production as a percentage of investment
2. Adjusted net farm income as a percentage of value of production
3. Adjusted net farm income as a percentage of investment

9. Match efficiency ratios for the farm to the correct descriptions. Write the correct numbers in the blanks provided.

______ a. Summary of all fertilizers, herbicides, and other chemical expenses per crop acre

______ b. Summary of all fuel, oil, and lube expenses per farm acre

______ c. Indicator of land, livestock, and machinery investment

______ d. Measure of size; superior to acres because capital investment includes capital in the form of land

______ e. Indicator of how productively labor was used

______ f. Indicator of the net earnings of the farm business

______ g. Average capital investment in machinery and equipment per farm acre

______ h. Summary of all fuel, oil, and lube expenses per crop acre

______ i. Average capital investment in machinery and equipment per crop acre

______ j. Summary of all fertilizers, herbicides, and other chemical expenses per farm acre

1. Value of farm production per man-year total labor
2. Fertilizer and chemical costs per crop acre
3. Fuel costs per total farm acre
4. Fuel costs per crop acre
5. Investment per total farm acre
6. Value of farm production per $100 of production costs
7. Machinery and equipment ivestment per crop acre
8. Fertilizer and chemical costs per total farm acre
9. Investment per crop acre
10. Machinery and equipment investment per total farm acre

10. Distinguish among types of comparison standards from different information sources. Write in the correct blanks an "H" for historical records, a "C" for comparative performance, and a "B" for budget comparisons.

_____a. Compares farm to similar farms

_____b. Sets realistic goals

_____c. Provides a management tool not available from any other source

_____d. Establishes standards of performance expressed in both physical and financial terms

_____e. Demonstrates financial progress over time under specific resource use and management

_____f. Determines whether or not striving for established goals is logical

_____g. Makes comparison with actual performance

11. Arrange in order steps in outlining a whole farm analysis. Write in the correct blanks a "1" for first step, a "2" for the second step, and so on.

_____a. Determine which enterprises were "losers" and which were "winners"

_____b. Determine the effect of expanding or contracting the size of an enterprise "winner" or "loser"

_____c. Determine why "loser" enterprises failed to return a profit

_____d. Determine if business is large enough to earn a satsifactory income or if the volume of business is a serious limitation

12. Distinguish between the advantages and disadvantages of a computerized analysis. Write in the correct blanks an "A" for advantages and a "D" for disadvantages.

_____a. Analysis is only as good as the information provided

_____b. Capacity of the computer to store and classify large volumes of information in a manner allowing quick retrieval

_____c. Provides cooperator with up-to-date accounting summaries with which to exercise budget control

_____d. Outputs are only completed at the end of the year

_____e. Accounting system may not be oriented toward a close integration of performance records and budget projections

_____f. Highlights income, expenses and farm production; calls cooperator's attention to key analysis figures that give some indication of the farming operation's efficiency and quality of management

13. State purposes of detailed enterprise analysis. Write your answer in the blanks below.

    a. ______________________________

    ____

    b. ______________________________

    ____

    c. ______________________________

    ____

    d. ______________________________

    e. ______________________________

14. Discuss allocation of overhead enterprise. Write your answer in the space below.

    ____

    ____

    ____

    ____

    ____

    ____

15. Match measures of enterprise size and volume to the correct descriptions. Write the correct numbers in the blanks provided.

    _____a. Measure the total cash outflow charged to the enterprise

    _____b. Measures the total income produced by the enterprise

    _____c. Measure returns and/or expenses associated with production units of various enterprises

    1. Total gross income
    2. Per unit analysis factors
    3. Total cash expenses

16. State methods of increasing volume of business. Write your answer in the blanks below.

    a. ______________________________

    b. ______________________________

    c. ______________________________

17. Match measures of enterprise earnings to the correct descriptions. Write the correct numbers in the blanks provided.

_____ a. Return to the capital invested in the enterprise and to operator's labor and management

_____ b. Balance of capital available to pay debt and management after a charge for operator and unpaid family labor is removed

_____ c. Measures the amount of income remaining to pay the cooperator for management of the farm

_____ d. Measures total productivity of the farm business

_____ e. Determines if cooperator would be better suited into invest capital elsewhere; can be compared to alternative investment opportunities

_____ f. Income accruing to operator and unpaid family labor, machinery, and capital investment, and operator's management of the enterprise

1. Rate of return on investment
2. Return to capital and management
3. Returns to labor, capital, and management
4. Return to management
5. Returns to labor, capital, machinery, and management
6. Net returns

18. Select from the list below measures of crop efficiency. Mark each correct answer with an "S" in the blanks provided.

_____ a. Yields per square mile

_____ b. Gross value of crops per row

_____ c. Fertilizer, insecticide, and herbicide costs per acre

_____ d. Total production costs per unit

_____ e. Machinery and power costs per row

_____ f. Machinery and power costs per acre

_____ g. Gross value of crops per acre

_____ h. Yields per acre

19. State methods of increasing crop returns. Write your answer in the space below and on the next page.

a. ______________________________

____

b. ______________________________

____

c. ____

____

20. Select from the list below measures of livestock earnings efficiency. Mark each correct answer with an "X" in the blanks provided.

 ______a. Livestock returns per $20 feed fed

 ______b. Feed costs per 100 pounds of manure

 ______c. Total cost of 100 pounds produced

 ______d. Livestock returns per $100 feed fed

 ______e. Feed costs per 100 pounds produced

21. Select from the list below measures of livestock production efficiency. Mark each correct answer with an "X" in the blanks provided.

 ______a. Pounds of implants per pound of gain

 ______b. Weight weaned per cow

 ______c. Average weaning weight

 ______d. Average days in holding pens

 ______e. Pigs farrowed or weaned per litter

 ______f. Pounds of concentrates, grains, and roughages per pound of gain

 ______g. Feed costs per 100 pounds produced

 ______h. Percent calf crop

 ______i. Average days in feedlot

 ______j. Eggs per hen

 ______k. Feed per dozen eggs

 ______l. Average daily gain

22. Select from the list below measures of performance between investment and income. Mark each correct answer with an "X" in the blanks provided.

 ______a. Rate of return to capital

 ______b. Rate of return to banker

 ______c. Overhead ratio

 ______d. Operating ratio

 ______e. Rate of capital turnover

23. Complete an *Oklahoma Young Farmer Record Book* whole farm business analysis form.

24. Complete an *Oklahoma Young Farmer Record Book* measures of performance form.

25. Complete a step-by-step outline of your whole farm analysis.

26. Compile the information needed for a whole farm computer analysis.

27. Compute a livestock and crop enterprise analysis.

(NOTE: If any of the above activities have not been done before the test, ask your instructor when they should be finished.)

WHOLE FARM AND DETAILED ENTERPRISE ANALYSIS
UNIT IV

ANSWERS TO TEST

1. a. 6
   b. 2
   c. 5
   d. 8
   e. 1
   f. 10
   g. 7
   h. 3
   i. 9
   j. 4
   k. 12
   l. 14
   m. 15
   n. 13
   o. 11

2. a. To provide insights into farm business
   b. To identify factors affecting profitability and efficiency of the farm business
   c. To help cooperator make better management decisions when farm records are kept over several years
   d. To allow cooperator to compare the farm business with various comparison standards

3. Answer should include:
   a. Actual or estimated *hours* of unpaid family labor, operator's labor, and hired labor; actual or estimated *value* of unpaid family labor, operator's labor, and hired labor
   b. Average farm assets; average net worth; opportunity rate of return on capital
   c. Amount of increase or decrease between beginning and ending net worth values in a given year
   d. Cash interest expense; accrued unpaid interest adjustment

4. a. 3
   b. 4
   c. 6
   d. 8
   e. 2
   f. 9
   g. 10
   h. 5
   i. 7
   j. 1

5. b, c, d, f

6. a. 8 f. 7
   b. 9 g. 1
   c. 2 h. 5
   d. 3 i. 10
   e. 4 j. 6

7. Answer should include:
   a. Is calculated by the average farm assets divided by man-year's total labor
   b. Depends on cooperator's policy of valuing capital assets
   c. Does not include values of leased land or facilities
   d. Is difficult to define a meaningful standard
   e. Is best guide to comparing capital investment in cooperator's farm with the average of a group of farms

8. a. 3
   b. 1
   c. 2

9. a. 2 f. 6
   b. 3 g. 10
   c. 9 h. 4
   d. 5 i. 7
   e. 1 j. 8

10. a. C e. H
    b. B f. B
    c. H g. B
    d. C

11. a. 2
    b. 4
    c. 3
    d. 1

12. a. D
    b. A
    c. A
    d. D
    e. D
    f. A

13. a. To estimate level of profitability
    b. To identify factors affecting profitability
    c. To determine relative efficiency and profitability of enterprises
    d. To indicate enterprise which could be increased or decreased to increase profits
    e. To help cooperator make management decisions when enterprise records are kept over a number of years

14. Answer should include:
    a. Fixed costs--Are allocated according to use record, occupancy percentage, or on the basis of custom rates
    b. Variable costs--Are allocatd on the basis of enterprise volume percentage
    c. Income--May be allocated on basis of why receipts were received

15. a. 3
    b. 1
    c. 2

16. a. Increase output
    b. Increase size of operations
    c. Buy or rent additional acreage

17. a. 3
    b. 2
    c. 4
    d. 6
    e. 1
    f. 5

18. c, d, f, g, h

19. a. Add acreage
    b. Use higher yielding varieties
    c. Utilize low return crops in livestock feeds

20. c, d, e

21. b, c, e, f, h, i, j, k, l

22. a, c, d, e

23. Evaluated to satisfaction of instructor
24. Evaluated to satisfaction of instructor
25. Evaluated to satisfaction of instructor
26. Evaluated to satisfaction of instructor
27. Evaluated to satisfaction of instructor

GENERAL MARKETING AND FORWARD CONTRACTS
UNIT V

UNIT OBJECTIVE

After completion of this unit, the cooperator should be able to discuss marketing, in general, and forward contracts, specifically. This knowledge will be evidenced through completion of assignment sheets and unit test with a minimum of 85 percent accuracy.

SPECIFIC OBJECTIVES

After completion of this unit, the student should be able to:

1. Match terms associated with general marketing and forward contracts to the correct definitions.
2. State benefits of producer marketing.
3. State types of buying and selling.
4. Select from a list purposes of forward pricing.
5. Distinguish between methods of forward pricing.
6. Select from a list advantages of forward contracts compared to futures market contracts.
7. State essential elements of a legal contract.
8. Distinguish between types of contracts.
9. Select from a list contracts required by the Statute of Frauds to be in writing.
10. Select from a list points to consider in deciding to contract.
11. State possible shortcomings of forward contracts.
12. Select from a list minimum provisions needed in forward contracts.
13. State guidelines for developing a specific contract.
14. Select from a list characteristics needed for good forward contracts.
15. Name economic factors affecting forward pricing decisions.
16. Select from a list characteristics of beef cattle contracts.
17. Discuss characteristics of slaughter hog contracts.

18. Distinguish between points usually specified in beef cattle and slaughter hog contracts.

19. Select from a list characteristics of feeder pig contracts.

20. State points usually contained in feeder pig contracts.

21. Discuss characteristics of poultry producer contracts.

22. Select from a list characteristics of cotton contracts.

23. Match types of cash grain contracts to the correct descriptions.

24. Evaluate a forward contract for feeder cattle.

25. Evaluate a forward contract for market hogs.

26. Evaluate a forward contract for growing pullets.

27. Evaluate a forward contract for cotton.

28. Evaluate forward contracts for wheat.

29. Evaluate a cattle feeding contract.

GENERAL MARKETING AND FORWARD CONTRACTS
UNIT V

SUGGESTED ACTIVITIES

I. Suggested activities for the instructor:

   A. Provide cooperator with objective sheet.

   B. Provide cooperator with information and assignment sheets.

   C. Discuss unit and specific objectives.

   D. Discuss information and assignment sheets.

   E. Discuss with cooperators the importance of having an attorney examine all contracts prior to acceptance of that contract.

   F. Discuss with cooperators production costs, breakeven analysis, and asking price for commodities to be considered for forward pricing

   G. Subscribe to "Doane's Agriculture Report-Reference Volume." Order from Doane's Agricultural Service, Inc., 8900 Manchester Road, St. Louis, Missouri 63144. Reports of interest for this unit include:

      1. *#45, Year-End Market Roundup*

      2. *#81, Cost of Gain Affects Marketing Decisions*

      3. *#91, Grain Marketing Tables*

   H. Obtain a copy of enterprise budgets of interest to class members from Oklahoma State University. These can be used as aides in determining production costs and returns. *O.S.U. Enterprise Budget Books* can be ordered from O.S.U. Cooperative Extension Service, 513 Ag. Hall, Oklahoma State University, Stillwater, Oklahoma, 74078.

   I. Obtain a copy of the following O.S.U. Extension Fact Sheets for each cooperator in class. Fact sheets may be obtained from your county extension director or by contacting the O.S.U. Cooperative Extension Service 513 Ag. Hall, Oklahoma State University, Stillwater, Oklahoma, 74078.

      1. *#414, Forward Pricing of Wheat*; September, 1974.

      2. *#425, Selling U.S. Wheat in Foreign Markets*; July, 1975.

      3. *#426, Beef Cycle of the 1970's: Warning Signals, Guides to Action*; December, 1975.

      4. *#428, Costs of Holding Wheat*; September, 1976.

5. *#431, Managing Livestock Risks Through Forward Pricing*; 1978.
6. *#434, Pricing Alternative for Livestock Producers*; 1978.
7. *#441, Marketing Lambs for Increased Profit*; 7-79.
8. *#438, Marketing Strategy for Oklahoma Produced Feeder Rigs*; July, 1979.

J. Have an attorney who is familiar with agriculture and contracts speak to the class.

K. Use a panel of class members, former members, or area farmers to discuss their experience in forward pricing. Panel members should discuss both the advantages and disadvantages of forward pricing and be prepared to answer questions from the class.

L. Give test.

M. Critique test.

N. Reteach, if necessary.

II. Instructional materials:

A. Objective sheet

B. Information sheet

C. Assignment sheets

1. Assignment Sheet #1--Evaluate a Forward Contract for Feeder Cattle
2. Assignment Sheet #2--Evaluate a Forward Contract for Market Hogs
3. Assignment Sheet #3--Evaluate a Forward Contract for Growing Pullets
4. Assignment Sheet #4--Evaluate a Forward Contract for Cotton
5. Assignment Sheet #5--Evaluate Forward Contracts for Wheat
6. Assignment Sheet #6--Evaluate a Cattle Feeding Contract

D. Answers to assignment sheets

E. Test

F. Answers to test

III. Unit references:

A. Roy, Ewell P. *Contract Farming and Economic Integration.* Danville, Illinois: The Interstate Printers & Publishers, Inc., 1972.

B. Purcell, Wayne D. *Agricultural Marketing: Systems, Coordination, Cash and Futures Prices.* Reston, Virginia: Prentice-Hall Publishing Co., 1979.

C. Wells, R.C., Danielson, L.E., Liner, H.L., Pugh, C.R., and Weathers, C.R. *Production and Resource Development/In-Service Training in Economics.* Raleigh, North Carolina: Economics Special Report No. 43, North Carolina State University & U.S. Department of Agriculture, 1976.

D. Hummer, Paul D. *Class Notes Agricultural Economics 3303, Agriculture Marketing I.* Stillwater: Oklahoma State University, 1975. Mimeographed.

E. Nichols, Everett, Jr. *The ABC's of Using Cash Contracts.* Starksville, Mississippi: Cooperative Extension Service/Mississippi State University, Publication 1088, 1978.

F. Nichols, Everett, Jr. *Contracting Soybeans with Local Elevator.* Starksville, Mississippi: Cooperative Extension Service/Mississippi State University, Publication 1087, 1978.

G. Nichols, Everett, Jr. *Forward Pricing Soybeans.* Starksville, Mississippi: Cooperative Extension Service/Mississippi State University, Publication 1086, 1978.

H. Nichols, Everett, Jr. *Developing a Soybean Marketing Plan.* Starksville, Mississippi: Cooperative Extension Service/Mississippi State University, Publication 1084, 1978.

I. Sporleder, Thomas L., Sullivan, Gregory M.; Feagan, Johnny R., and McDonald, Russell F. *Cotton: Tables for Hedging Variable Costs of Production.* College Station, Texas: Texas Agricultural Extension Service/Texas A&M University, MP-1188, 1975.

J. McDonald, Russell F., Sporleder, Thomas L., and Feagan, Johnny R. *Contracting Dryland or Irrigated Peanuts: A Strategy for Controlling Risks.* College Station, Texas: Texas Agricultural Extension Service/Texas A&M University, MP-1198, 1975.

K. McDonald, Russell F., Sporleder, Thomas L., and Feagan, Johnny R. *Contracting Dryland or Irrigated Wheat: A Strategy for Controlling Risks.* College Station, Texas: Texas Agricultural Extension Service/Texas A&M University, MP-1197, 1975.

L. White, Morris, and Davis, Michael A. *Forward Contracting of Cotton.* Auburn, Alabama: Agricultural Experiment Station/Auburn University, Bulletin 509, 1979.

M. Farmer, Charles M. *The Cash Market for Grain and Soybeans.* Knoxville, Tennessee: Agricultural Extension Service/University of Tennessee, Publication 763, 1978.

N. Farmer, Charles M. *Forward Pricing Grain and Soybeans with Cash Contracts.* Knoxville, Tennessee: Agricultural Extension Service/University of Tennessee, Publication 764, 1978.

O. Bufkin, Truett S. *Using Cash "Forward" Contracts in Marketing Cotton.* Starksville, Mississippi: Cooperative Extension Service/Mississippi State University, Publication 646, 1974.

P. Bufkin, Truett S. *Using Cash Contracts in Marketing Soybeans.* Starksville, Mississippi: Cooperative Extension Service/Mississippi State University, Publication 632, 1973.

Q. Brooker, John R. *Forward Contracting of Cotton in Tennessee: Attitudes of Growers, Ginners, and Buyers.* Knoxville, Tennessee: Tennessee Farm and Home Service, July, August, September, 1974.

R. Moore, Donald D., and Martin, J. Rod. *Farm Size in Relation to Market Outlets and Forward Contracts for Major Field Crops and Beef Cattle, Texas Rolling Plains.* College Station, Texas: Texas Agricultural Experiment Station/Texas A&M University, B-1187, 1978.

S. Bucher, Robert F. *Wintering Calves on Contract.* Bozeman, Montana: Montana Agricultural Experiment Station/Montana State University, Bulletin 1059, 1972.

T. Dobson, W. D., Campbell, G. R., and Rhodes, R. V. *Producing and Marketing Hogs Under Contract: Pork Industry Handbook.* East Lansing, Michigan: Cooperative Extension Service/Michigan State University, Extension Bulletin E-1083, 1977.

GENERAL MARKETING AND FORWARD CONTRACTS
UNIT V

INFORMATION SHEET

I. Terms and definitions

A. Market--That area or space wherein the supply and demand forces can work

Examples: Local livestock auction; grain elevator; grocery store; retail outlet

(NOTE: This is the place wherever an exchange of commodities occurs between a buyer and a seller.)

B. Supply--Amount or quantity of commodity or services that would be offered for sale by a producer or supplier in a given market at a given series of prices over a given period of time

C. Demand--Relationship between a commodity's price and the quantity of the commodity which consumers are willing to purchase

(NOTE: It is usually assumed that as price of the commodity increases, consumers will purchase less of the commodity.)

D. Commodity--Goods that can be bought and/or sold

E. Marketing--Economics and behavioral activities which are involved in coordinating various stages of economic activity from production to consumption

(NOTE: This includes all of the processes and services involved in moving a commodity from the producer to the ultimate consumer. The activity involved in buying and selling a product.)

F. Producer--Person or firm who either produces, manufactures, or creates utility in a commodity or a service as it moves through the marketing channel

Examples: Farmer; rancher; flour mill; canning company

G. Utility--Usefulness of a commodity as measured by its ability to satisfy "want"

(NOTE: A commodity utility generally involves changing the form, place, time, and/or value of the commodity.)

H. Producer marketing--Producer making sell or purchase decisions

I. Production risk--Commodity productivity is less than expected

Examples: Crop yields may be less than expected because of weather conditions; fat cattle gain less than expected

INFORMATION SHEET

J. Market risk--Chance of a loss coming from the market place

Examples: Unexpected market developments, prices less than expected; production costs more than expected

K. Forward pricing--Establishment of a price before delivery for some commodity; allows producer to shift some or all of the price risk associated with production to someone else

L. Contract--Legally enforceable arrangement between two or more parties

M. Buyer--Purchaser of a commodity offered for sale or exchange

N. Seller--Supplier of a commodity offered for sale or exchange

O. Free market--Market where there is a true interaction of supply and demand without interference of government controls, tariffs, monopolies, or other artificial barriers to the supply and demand of a commodity

P. Price cycle--Changes in price which tend to follow a similar pattern over a period of years

Example: Beef cattle price cycle

Q. Price seasonality--Changes in price which tend to follow a similar pattern within a year

R. Surplus--Condition that exists when supply is greater than demand at some given price

S. Ultimate consumer--Person or firm who finally utilizes or consumes a commodity

II. Benefits of producer marketing

A. Gives cooperator economic gains

Example: Better understanding of market system

B. Lowers costs per unit

Example: Increased efficiency through use of new technology

C. Increases output per dollar

Example: Forward pricing reduces market risk

D. Gives a better quality product

Example: Better coordination between production and consumer demands

INFORMATION SHEET

III. Types of buying and selling

A. Buying

1. According to time

Examples: Purchase fertilizer before major use period; purchase hay from field rather than barn

2. According to location

Examples: Purchase supplies from local suppliers or markets; purchase stockers from a local auction rather than a central auction

3. According to form

Examples: Large purchases; bags versus bulk form; raw materials; liquid nitrogen versus urea

B. Types of selling

1. According to time

Example: Time of delivery and pricing

2. According to location

Examples: Geographic concentration of population and processors may determine the premiums or discounts to be applied; buyers will not pay more for locally produced products than the price for identical products in their areas plus the cost of transportation; randomly occurring differences among regional and local markets may cause temporary shortages or surpluses adding to premiums and discounts

3. According to form

(NOTE: Premiums or discounts may be offered for products with quality inherent in the genetic makeup of the product.)

Examples: Differences may be due to variances in supply created by intentional selection of varieties, production, or marketing practices; differences in demand also may cause pricing variations; mechanical form changes, where one form of product can be changed to another

(NOTE: Mechanical form changes generally will not command a premium higher than the cost of that transformation.)

INFORMATION SHEET

IV. Purposes of forward pricing

- A. Reduces marketing risk
- B. Establishes a more certain price for products
- C. Enables producers to exchange market risk for production risk

  Example: If a producer is more efficient at production than marketing, that producer may concentrate more on production than marketing with the use of forward pricing

- D. Tries to get a higher price

V. Methods of forward pricing

- A. Forward contract
  1. Agreement between buyer and seller
  2. Details price that is paid for the product, delivery time of the product, specifications of quality or grade, and location of weighing and delivery point

     (NOTE: Contract price is only meaningful if quality, location, and time of delivery are specified or implied.)

     Example: Cotton producer working out a contract with a local processor in the spring which calls for delivery in the fall
- B. Futures contract
  1. Initiation of a position in a futures market that is intended as a temporary substitute for the sale or purchase of a commodity
  2. There is a guaranteed margin which could be converted to a price equivalent
  3. Standard contract forms that are traded at a central location to establish a forward price

VI. Advantages of forward contracts compared to futures market contracts

- A. An exact price for the cooperator's production is specified, whereas the hedger must be concerned with basis fluctuations
- B. Prepayment is sometimes provided

  (NOTE: Futures markets require a margin [money] be deposited for both buyers and sellers.)

INFORMATION SHEET

C. Sizes are usually negotiable

(NOTE: Futures contracts sizes are set.)

VII. Essential elements of a legal contract

(NOTE: A contract may be written or oral.)

A. Two or more legal parties

(NOTE: Parties must have the legal capacity to act, be mentally competent, and of legal age.)

B. Offer and acceptance

(NOTE: This is evidence by all parties that they tend to be bound. This usually takes the form of an offer or proposal by one party which is accepted by the other party or parties.)

C. Sufficient consideration

(NOTE: This is usually the promise of each party to fulfill the contract.)

D. Must not offend public policy or morals

VIII. Types of contracts

A. Expressed--Parties state terms of contract in writing

B. Inferred--Actions or conduct of parties indicate an intention to contract

IX. Contracts required by the Statute of Frauds to be in writing

(NOTE: If the type of contracts listed below are not in writing, the law says that they are void and therefore, unenforceable.)

A. Every agreement, promise, or contract to pay any commission for or upon sale of any interest in real estate

B. Every special promise to answer for the debt, default, or misdoing of another person

C. Every agreement that by its terms is not to be performed in one year from the making thereof

D. Every agreement, promise, or undertaking made upon consideration of marriage, except mutual promises to marry

E. Every special promise made by an executor or administrator to answer damages out of his or her own estate

INFORMATION SHEET

X. Points to consider in deciding to contract

(NOTE: Success or failure using cash contracts will depend on the producer's goals and objectives. The odds for success are not good for a producer trying for the highest possible price. The producer trying to lock in an acceptable price and protect against adverse price movements has a much greater chance of success.)

A. Estimate production costs

B. Estimate returns to management

(NOTE: Production costs and returns to management should be estimated; this gives the producer a good start for determining if an offered price will be acceptable.)

C. Determine what market is offering

(NOTE: Look at no less than three offerings. See at what price they are willing to contract and for what month they want to contract.)

D. Determine when to contract

(NOTE: Determining when to contract depends on goals and objectives set previously. A producer trying for higher prices will want to see market direction before contracting; producers wishing to lock in an acceptable price and reduce risk will probably want to contract as soon as possible. A producer who contracts the entire estimated output may experience difficulties if there is a crop loss due to any number of factors. Therefore, a generally accepted practice is to *never* contract more than two-thirds of the anticipated output. This will help avoid lawsuits due to nondelivery.)

E. Know the contractor and ask for financial statements

F. Investigate the contractor to determine past reliability

G. Receive expert analysis on the contract; contact an attorney

H. Do not let contractor rush you into signing contract

I. Proceed with the contract if it is still desired after all questions are answered satisfactorily

XI. Possible shortcomings of forward contracts

A. Lack of mutuality of responsibilities

B. Overemphasis on uniform contracts rather than on equitable contracts

C. Lack of sufficient details on duties and responsibilities of each party

INFORMATION SHEET

D. Lack of clarity as to methods of pricing, grading, and payment

E. Insufficient documentation of methods used to calculate gross and net payments

F. Lack of orderly procedures for handling grievances

G. Tying clauses which force cooperators to procure inputs exclusively from contractors

H. Too short of term contracts which fail to correspond to life of fixed investment

I. Shifting risks from one party to another without renumeration

J. Excessive control by one party over another

K. Refusal of most contractors to bargain collectively

L. Vagueness and complication of many contracts

M. Requiring cooperators to borrow funds for contractors' use

N. Encouraging new cooperators while restricting expansion of established cooperators

O. Delays in making payments to cooperators

XII. Minimum provisions needed in forward contracts

(NOTE: In the order for a contract to be fair, it must be equitable to both buyer and seller. Buyers are attempting to increase the volume of crops handled. Sellers generally are trying to reduce price risk by locking in an acceptable price.)

A. Contract is in writing

B. Parties to contract are specified

C. Commodity being exchanged is identified

D. Quantity of commodity involved is listed

E. How commodity will be packaged is described

F. Any additional specifications are listed

Examples: Grade; weight; sex; type

G. Price per unit or method of determining price is given

H. Terms of payment are specified

I. Point and method of delivery is named

J. Time of delivery is identified

INFORMATION SHEET

XIII. Guidelines for developing a specific contract

- A. Use straightforward language

  (NOTE: Language also must be legally acceptable.)

- B. Include names and addresses of buyers and sellers
- C. Specify quantity

  Example: A contract which specifies "acres only" may be open to dishonest dealings depending on whether market price is above or below a specified contract price at time of delivery

- D. Express specified quantity in the same terms as the U.S. standards for the commodity
- E. Specify place and time of delivery, and alternative delivery points if the designated receiving facility is closed temporarily
- F. Include a statement that the crop or livestock is free from all liens and encumbrances
- G. State provisions for under or overdelivery
- H. Include a liquidated damages clause in case of breach of contract

  (NOTE: This is a specific dollar amount in case of default by both buyer and seller.)

- I. Attach the *Uniform Commercial Code*, if desired
- J. Include an arbitration clause to settle disputes which might arise

XIV. Characteristics needed for good forward contracts

- A. Contracts should be equitable to both buyer and seller
- B. Minimum provisions must be included
- C. Guidelines for developing a specific contract should be followed

XV. Economic factors affecting forward pricing decisions

- A. Expected prices
- B. Markets
- C. Credit
- D. Management
- E. Labor

INFORMATION SHEET

F. Market competition

G. Farm size

H. Technology

Examples:

Economic Situation	Action
Expected low prices	Forward price
Expected high prices	Independent
Unavailable markets	Forward price
Open markets	Independent
Credit at low interest rate	Independent
Credit at high interest or unavailable	Forward price
Good management skill	Independent
Poor management skill	Forward price
Labor plentiful and underemployed	Independent
Labor scarce and busy	Forward price
Market competition good	Independent
Market imperfectly organized	Forward price
Farm very small	Forward price
Farm an economic unit	Independent
Technology changes fast	Forward price
Technology changes slow	Independent

(NOTE: The situations above are offered as general examples of when to forward price and when to stay independent.)

XVI. Characteristics of beef cattle contracts (Assignment Sheet #1)

A. Contracts are used mainly to buy and sell feeder cattle

(NOTE: Feeder cattle buying and selling varies over time due to expectations of prices, supply of feeder calves, quality of calves available, competition among feeding areas, and long-run economic prospects for beef cattle.)

B. Contracts generally will call for delivery at some specified future date after signing the agreement

C. Some contracts specify certain production practices must be followed

Examples: No use of implants; no grain fed

D. Lower marketing costs, less handling, and personal contacts with producers may exist in relation to beef cattle contract use

INFORMATION SHEET

XVII. Characteristics of slaughter hog contracts (Assignment Sheet #2)

A. These contracts are usually created between meat packers and individual hog producers for a specified amount of market hogs to be delivered at a future date at a specified price

B. Packers may use these contracts to improve scheduling and quality of purchases

C. Producers, generally, are interested in these types of contracts when prices are predicted to decline or when hog prices have been low for a period of time

XVIII. Points usually specified in beef cattle and slaughter hog contracts

A. Beef cattle contracts

1. Sex
2. Weight
3. Price at delivery
4. Amount of partial payment involved
5. Description and location of cattle
6. Delivery rate
7. Free on Board (FOB) delivery point
8. Allowable ten percent cut for the buyer to sort out undesirable animals
9. Percentage shrink
10. Scales to be used to determine rate
11. Health and brand certificates furnished by seller

B. Slaughter hog contracts

1. Provisions covering the number of barrows and gilts to be delivered
2. Acceptable assortment of weights and grades
3. Base price for acceptable assortments
4. Delivery date and locations
5. Partial payment provisions
6. Remedies for breach of contract
7. Length of time for the agreement to be in effect

INFORMATION SHEET

XIX. Characteristics of feeder pig contracts

A. Contracts are used in conjunction with the selling of feeder pigs by the producer to a marketing agent

B. Producers supply all production inputs

C. Prices received for feeder pigs may be related to market hog prices, but price is generally the market price for pigs

D. Producers believe grading, marketing services, or technical knowledge supplied by the marketing agency are worth the fees paid to the marketing agent

XX. Points usually contained in feeder pig contracts

A. Producers agree to market all pigs through the marketing agency

B. Marketing agent agrees to sell the pigs for the producers for a specified fee

C. Time and place of marketing are specified

D. Specific management practices relating to health and weight of pigs must be followed

E. Field of supervision and technical assistance may be provided by larger marketing agents

XXI. Characteristics of poultry producer contracts (Assignment Sheet #3)

A. Contracts usually are used by major poultry processors and producers who basically act as contracted labor

(NOTE: Contract broiler production accounts for about 75% of the broiler growers, 20% of the farms are company-owned farms, and 5% are independently produced.)

B. The most widely used contract is called the *flat fee plan*

Example: Under this type agreement, contractors provide feed, chicks, medicines, and other supplies. Producers provide houses, equipment, fuel, litter, and labor. Title to birds belongs to the contractor. When birds are sold, contractor pays the producer a flat sum per pound, per bird, or per square foot of housing space. The producer is not indebted to the dealer for the cost of feed, chicks, or supplies

INFORMATION SHEET

C. An *open account plan* also is used between producer and contractor and may be written or oral

(NOTE: A written contract is preferred.)

Example: Under an open account plan contractors furnish houses, equipment and, in some cases, fuel and litter. Contractors may have title to the broilers. Upon marketing, the contractor deducts costs for outstanding credit and interest and the producer receives the residual amount

XXII. Characteristics of cotton contracts (Assignment Sheet #4)

A. Contracts are used in most southeastern and southwestern parts of the United States

B. Contracts, generally, will be between producers and cotton merchants, but in some areas local ginners will contract with growers

C. Percentage of cotton crops contracted by producers generally depends on future price expectations

D. Contracts, in most cases, will specify the sale of cotton produced on a specified number of acres

(NOTE: Occasionally, contracts will be offered which specify a certain number of pounds of cotton.)

E. Required production practices may range from a minimum of only prohibiting certain harvesting practices and using a defoliant prior to harvesting to detailed descriptions of ginning practices and specifying varieties to be grown

(NOTE: Many contracts specify that cotton be hand or spindle-picked and cotton strippers not be used.)

F. Price is usually related to a stated quality and quantity

(NOTE: Base price is stipulated and applies to all grades and all lengths within micronaire measurements of 3.5 to 4.9. Discounts may be applied against cotton not meeting micronaire requirements or for cotton delivered after cut-off dates. Base prices may be based on spot market prices or current market prices.)

XXIII. Types of cash grain contracts (Assignment Sheet #5)

A. Fixed price agreements--Stipulate the commodity the producer agrees to deliver to the buyer, time of delivery, and price

(NOTE: Commonly known as *booking*, price is generally based on a futures market price. The month in which delivery is to take place is used as a base period month; additions or subtractions to price may be made on quality. Cash contracts offered price may be reduced to cover the cost borne by the buyer in conjunction with protection against price risk associated with a futures market hedge.)

INFORMATION SHEET

B. Deferred price agreements--Stipulate amount, quality, time of delivery, and other obligations which may be found in a fixed price agreement

(NOTE: Price is not a part of the contract as it is established at the seller's option during a date prior to the settlement date. Deferred price agreements are commonly known as *price later agreements*. Producers using this type of contract try to benefit from seasonal price increases without owning storage facilities. When the grain is delivered to the elevator, title passes to the elevator in exchange for a promise to pay at a later date. No warehouse receipt is received and the producer cannot reclaim the grain at a later date because it is usually shipped out after receipt. Producers should know well the elevator where business is transacted and producers should consider managerial practices of the elevator as well as solvency. This type contract is useful to producers with no on-farm storage and those who wish to delay receipt of income for income tax purposes. Cooperator should be aware of tax implications.)

C. Pooled sales contracts--Allow cash to be advanced to the producer at delivery and as grain is sold during the years as additional price settlements are made with producers

(NOTE: Total price received is an average over a period of several months and usually is used by cooperatives.)

GENERAL MARKETING AND FORWARD CONTRACTS
UNIT V

ASSIGNMENT SHEET #1--EVALUATE A FORWARD CONTRACT FOR FEEDER CATTLE

NAME ______________________________ SCORE ______________

On the following pages are

1. A checklist for determining minimum provisions needed in forward contracts, and
2. A completed sample forward contract for feeder cattle.

The checklist on the next page is needed for both the cooperator and contractor to enter into a sound contract.

(NOTE: This list is intended to provide a *minimum* guideline of points to consider in forward contracts. It does not include all points which should be considered.)

Evaluate the feeder cattle contract to determine if it contains the appropriate information. Make any comments for changing or correcting the contract at the bottom of the checklist page.

ASSIGNMENT SHEET #1

CHECKLIST FOR DETERMINING PROVISIONS NEEDED IN FORWARD CONTRACTS

Mark an "X" in the appropriate blanks.

	YES	NO
1. Is contract equitable and fair to both the cooperator and the contractor?		
2. Is contract in writing?		
3. Are parties to contract specified and addresses included?		
4. Is commodity to be exchanged identified?		
5. Is quantity of the commodity involved listed?		
6. Is how commodity will be packaged described?		
7. Are any additional specifications listed?		
8. Is price per unit or method of determining price given?		
9. Are terms of payment specified?		
10. Is point and method of delivery named?		
11. Is time of delivery identified?		
12. Is there a provision for under or overdelivery?		
13. Are provisions made for breach of contract?		
14. Is there a statement that the commodity involved is free of all liens and encumbrances?		
15. Is there an arbitration clause to settle disputes which might arise?		

COMMENTS: ______________________________

ASSIGNMENT SHEET #1

SAMPLE FEEDER CATTLE PURCHASE CONTRACT

This contract, made this 27th day of April, 19 81, between (name) Gregory E. Pierce of (address) Rt. 2, Perkins, OK party of the first part, the seller, and (name) James J. Hodgens, of (address) Whitefield, OK party of the second part, and buyer.

Witnesseth: For and in consideration of $21,000.00 representing approximately 15 percent of the contract value as advance and part payment on this contract receipt whereof is hereby acknowledged; the seller hereby sells and agrees to deliver to the buyer, and the buyer agrees to buy from the seller, the following described cattle on the following terms and the seller does hereby guarantee the title thereto:

DESCRIPTION					PRICE	PLACE	TIME OF DELIVERY	
NO.	AGE	SEX	BREED	MINIMUM WEIGHT	PER CWT.	OF DELIVERY	ON OR ABOUT	NO LATER THAN
250	12 mo.	M	Mixed	700 lbs.	$80.00	Stigler, OK	8-10-81	8-15-81

(Seller may consent to hold cattle beyond delivery date at buyer's expense or on other mutually agreeable terms.)

Cattle shall be weighed with one of the three shrink options:

1. After 12-hour stand without feed or water, or
2. After _______-mile drive without feed or water, or
3. Shrink 3 percent or 21 pounds.

Cattle so described are subject to state and federal inspection, and seller guarantees that interstate shipment of same can be made from delivery point. Buyer shall have authority to reject sick, crippled, or diseased cattle and all cattle under 680 pounds except that buyer cannot reject more than 2 percent or 8 cattle on basis of weight.

The balance of the purchase money is to be paid to the seller by the buyer at the time and place of delivery as stated above, through acceptable bank exchange.

If the buyer fails to accept the cattle on the terms described, the advance payment made at the time of the execution of this contract will be retained by the seller as liquidated damages for the breach of this contract.

ASSIGNMENT SHEET #1

Provided further that in the event parties to this contract cannot agree, they shall submit their differences to a board of arbitration consisting of three persons (one to be selected by each party to the contract, and the two thus selected shall select a third) whose decision shall be final.

Other conditions (specify) No implants or grain fed

By James J. Hodgens Buyer Gregory E. Pierce Seller

The undersigned, holder of a mortgage or other lien on the livestock above described, in consideration, hereby consents to the sale of said cattle to James J. Hodgens, free of such mortgages or other lien upon the terms and conditions specified.

Clara Cooper
WITNESS

J. N. Sloan
MORTGAGEE

GENERAL MARKETING AND FORWARD CONTRACTS
UNIT V

ASSIGNMENT SHEET #2--EVALUATE A FORWARD CONTRACT FOR MARKET HOGS

NAME ______________________________ SCORE ______________

On the following pages are

1. A checklist for determining minimum provisions needed in forward contracts, and
2. A completed sample contract for market hogs.

The checklist on the next page is needed for both the cooperator and contractor to enter into a sound contract.

(NOTE: This list is intended to provide a *minimum* guideline of points to consider in forward contracts. It does not include all points which should be considered.)

Evaluate the sample contract for market hogs to determine if it contains the appropriate information. Make any comments for changing or correcting the contract at the bottom of the checklist page.

ASSIGNMENT SHEET #2

CHECKLIST FOR DETERMINING PROVISIONS NEEDED IN FORWARD CONTRACTS

Mark an "X" in the appropriate blanks.

	YES	NO
1. Is contract equitable and fair to both the cooperator and the contractor?		
2. Is contract in writing?		
3. Are parties to contract specified and addresses included?		
4. Is commodity to be exchanged identified?		
5. Is quantity of the commodity involved listed?		
6. Is how commodity will be packaged described?		
7. Are any additional specifications listed?		
8. Is price per unit or method of determining price given?		
9. Are terms of payment specified?		
10. Is point and method of delivery named?		
11. Is time of delivery identified?		
12. Is there a provision for under or overdelivery?		
13. Are provisions made for breach of contract?		
14. Is there a statement that the commodity involved is free of all liens and encumbrances?		
15. Is there an arbitration clause to settle disputes which might arise?		

COMMENTS: ______________________________

ASSIGNMENT SHEET #2

SAMPLE MARKET HOG CONTRACT

This is an agreement entered into this 2nd day of January, 19 81, at Sasakawa, OK, between Robert G. Patton, hereinafter known as the Producer, and Acme Meat Co., Oklahoma City, OK, hereinafter known as the Company.

The purpose of this agreement is to have an understanding of the conditions that will exist and what is expected of each party in growing market hogs.

Section 1. The Company and the Producer jointly agree that:

1. The Company, in consideration of the agreements with the Producer hereinafter set forth, hereby furnishes to the Producer 300 (number) feeder pigs. The Producer, in consideration of the agreements with the Company, agrees to raise the pigs to a marketable stage.

2. The pigs are to be placed between ________________ (dates) and are to remain on Robert G. Patton farm located in or near Sasakawa, OK (town or city), Seminole (county or parish), OK, (state).

3. The Company shall have full title to the pigs placed on the Producer's farm, including title to the feed, supplies, and other items supplied by the Company.

4. The terms of this contract in no way imply or constitute a partnership, joint venture or employer-employee relationship, but the Producer's actions constitute an independent operation.

5. The Producer shall insure for fire and windstorm damage to the buildings and equipment used in pig production. The Company shall insure for fire and windstorm damage to pigs, feed, or any other supplies furnished by the Company.

6. Neither party will assign this contract to any person(s) or entity nor turn care of said pigs over to anyone else without written consent of the other party.

Section 2. The Producer agrees to the following:

1. That the Company be allowed full and complete right of ingress and egress to the Producer's premises for supervision and control of the pig production operation.

2. That he will provide the following equipment and supplies.

ITEM	TYPE

ASSIGNMENT SHEET #2

3. That he will provide housing satisfactory to the Company.

4. That he will furnish adequate labor at all times when pigs have to be handled.

5. That he will not use feed furnished by the Company for any other purpose than the feeding of pigs owned by the Company.

6. That he will deliver or shall have delivered the finished hogs to a location point specified by the Company.

7. That he will follow the management program of the Company to the best of his ability and will maintain and keep daily records of feed consumption and mortality.

8. The Producer agrees to maintain on his farm only hogs supplied by the Company and that the Producer, by introducing hogs other than those per this agreement, will nullify and terminate this agreement effective the day such other hogs are introduced.

9. The Producer shall report to the Company or its designee, in writing, all losses from any cause whatever within twenty-four (24) hours from the date of such loss.

10. The Producer represents that all swine referred to herein shall be situated on either land owned by the Producer or upon land in the rightful possession of the Producer under written agreement for the period of this lease. If the Producer does not own land on which swine are to be situated and there is a change in landlord-tenant relationship, the Company has the option to terminate the contract and move the swine. Such change in landlord-tenant relationships shall be considered a breach of contract.

Section 3. The Company agrees to the following:

1. To provide pigs from the best breeding obtainable and to advocate the best management and feeding program known to the Company.

2. To supply and deliver the folloiwng items:

FEEDER PIGS: BREED OR CROSS Hampshire cross Yorkshire
WEIGHT 75 POUNDS
FEED Starter ration
MEDICINES As needed
VACCINES As needed
OTHER:

3. To provide a serviceman for regular visits or for any reasonable amount of time for assistance in production of said pigs.

4. To establish and maintain an account of all costs, charges, and receipts, and provide a final audit of the project account to the Producer.

5. To bear any loss after an audit of said account.

ASSIGNMENT SHEET #2

6. To have the right to terminate this contract if it is breached by the Producer, and remove pigs and furnished supplies from the Producer's premises.

In the event that the Company determines that the Producer is not exercising care, he shall notify the Producer in writing by U.S. certified mail and shall specify the nature of the lack of prudent care and the Company, may, within 3 days of said letter of notification having reached the Producer, terminate this agreement. In the event of said termination, all sums due by the Producer to Company shall be immediately payable on demand unless the Company exercises other conditions at its option.

7. The Company hereby agrees to furnish the Producer with the following documents or true copy of same relating to the Producer's hogs: (1) the number and date of market hogs picked up by grade and weight and (2) the manner of calculating total payment of the Producer according to the Producer's choice of payment option previously declared upon, together with all deductions as previously agreed to between the Producer and the Company.

8. Payment to the Producer shall be made in check no later than 7 days after delivery, pick up, or transfer of said hogs from the Producer to the Company.

Section 4. Conditions of payment:

1. The conditions of place of weighing and market price shall be as follows:

PLACE OF WEIGHING: Oklahoma City Stockyards
MARKET PRICE BASED ON: Chicago Mercantile April Live Hog Futures at date of delivery

2. The method of payment shall be as follows:

Payment in full upon receipt of market hogs.

3. Bonus payments shall be provided for as follows:

5¢ per pound bonus for all hogs grading USDA #1's as specified by USDA specifications

ASSIGNMENT SHEET #2

Section 5. Arbitration

The Producer and the Company jointly agree that any and all disagreements not reconciled between the Company and the Producer shall be referred to a board of three disinterested persons after either party has given two day's notice to the other party. This agreement to arbitrate is irrevocable notice to the other party. This agreement to arbitrate is irrevocable and supersedes any other manner or claim as a part of the consideration flowing to and from each of the parties hereto, the same being a condition precedent to any action against the other for the collection of accounts or damages, whereas the right to resort to an action of civil law or equity is hereby specifically waived in favor of arbitration.

Of the three disinterested arbitrators, one shall be appointed by the Company, one by the Producer and the third by the two thus appointed. In the event that the two arbitrators first selected are unable to agree on a third arbitrator, the State University Extension Specialist shall be requested to select the third arbitrator. The decision of these arbitrators shall be considered binding by the parties to this contract unless a matter of law or a sum exceeding $ 500 is involved. Any costs of arbitration shall be shared equally between the two parties to this contract.

Section 6. Other agreements

1. The Producer and the Company jointly agree that this agreement is a continuous one which shall be terminated only by either party giving notice in writing to the other party at least 90 days prior to the effective date of cancellation of this agreement, it is agreed that all sums become due and payable to the Producer to the Company and likewise by the Company to the Producer.

2. The Company's written recommendations on its hog production program are hereby attached and made part of this agreement and are understood and accepted by the Producer.

3. The failure of the Producer to produce or deliver, or of the Company to purchase any of the hogs produced and sold hereunder, shall not subject the party so failing to any liability to the other party, if such failure is due to strikes or other labor trouble, compliance with government order or request or any other cause beyond the party's control.

4. This contract shall be binding upon the heirs and executors, successors, assigns, and personal representatives of the parties.

5. The terms and provisions herein contained constitute the entire agreement between the parties and no statement or inducements by any party hereto or agent or representative of any party hereto which is not contained in this written agreement shall be valid or binding. This agreement may not be altered except in writing and signed by the parties.

6. The parties mutually agree that although this agreement is a continuous one, for the purpose of all calculations hereunder, each group of animals separately delivered shall constitute a unit and each unit shall begin a new leasing period from the date of delivery for that unit.

IN WITNESS THEREOF, The Producer has hereunto set his hand and seal and the Company has caused its hand and seal to be affixed hereto by and through its duly authorized officers.

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GENERAL MARKETING AND FORWARD CONTRACTS
UNIT V

ASSIGNMENT SHEET #3--EVALUATE A FORWARD CONTRACT FOR GROWING PULLETS

NAME ______________________________ SCORE ______________

On the following pages are

1. A checklist for determining minimum provisions needed in forward contracts, and
2. A sample forward contract for growing pullets.

The checklist on the next is needed for both the cooperator and contractor to enter into a sound contract.

(NOTE: This list is intended to provide a *minimum* guideline of points to consider in forward contracts. It does not include all points which should be considered.)

Evaluate the forward contract for growing pullets to determine if it contains the appropriate information. Make any comments for changing or correcting the contract at the bottom of the checklist page.

ASSIGNMENT SHEET #3

CHECKLIST FOR DETERMINING PROVISIONS NEEDED IN FORWARD CONTRACTS

Mark an "X" in the appropriate blanks.

	YES	NO
1. Is contract equitable and fair to both the cooperator and the contractor?		
2. Is contract in writing?		
3. Are parties to contract specified and addresses included?		
4. Is commodity to be exchanged identified?		
5. Is quantity of the commodity involved listed?		
6. Is how commodity will be packaged described?		
7. Are any additional specifications listed?		
8. Is price per unit or method of determining price given?		
9. Are terms of payment specified?		
10. Is point and method of delivery named?		
11. Is time of delivery identified?		
12. Is there a provision for under or overdelivery?		
13. Are provisions made for breach of contract?		
14. Is there a statement that the commodity involved is free of all liens and encumbrances?		
15. Is there an arbitration clause to settle disputes which might arise?		

COMMENTS: ____________________

ASSIGNMENT SHEET #3

SAMPLE STARTED PULLET GROWING CONTRACT

Section 1. Date, Contracting Parties, Description of the Terms of the Contract.

1. This contract is made this ____________ day of ________________, 19 ____, between ______________________________ hereinafter called the Contractor, and ________________________ of _______________________ (address, wife's name and address also), an independent contractor, hereinafter called the Grower.

2. The Contractor, in consideration of the agreements with the Grower hereinafter set forth, hereby furnishes to the Grower 7,000 (no.) baby pullet chicks to raise to 12 weeks of age. The Grower, in consideration of the agreements with the Contractor, agrees to raise the pullets to said age.

3. The baby pullet chicks are to be placed and are to remain throughout the growing period on the Amie Schenandoah farm, located in or near Stilwell (town or city), Adair (county), OK (state).

4. The Grower agrees that the Contractor shall have and retain full title to the birds and all supply items that the Contractor places on the Grower's farm except those items paid for by the Grower.

5. This contract shall end when the pullets are marketed unless continued by the Contractor offering chicks to the Grower and the acceptance of the chicks by the Grower. This contract shall govern the raising of such subsequent broods of chicks, except when modified in writing by amendment.

Section 2. Management Program.

1. The Contractor and the Grower jointly agree to the management program attached hereto which is incorporated and made a part of this contract.

Section 3. Production Items Supplied by the Contractor.

The Contractor agrees to:

1. Supply and pay for the feed, pullets, medication, etc. (Be sure to list others.)

2. Provice a serviceman, without cost to the Grower, whose duty will be to advise the Grower regularly on his management program and be on call at all reasonable times to give such advice.

ASSIGNMENT SHEET #3

Section 4. Items Supplied by the Grower.

1. Furnish land, building(s), and equipment including brooders, feeders, waterers, etc., necessary to raise pullet chicks according to practices stated in this contract and appendix thereto.

2. Personally supervise and supply all labor for production of the pullets.

3. Remove and dispose of the manure and completely clean and sanitize the house before the next group of baby chicks is delivered.

Section 5. Payment to the Grower.

1. The Contractor and the Grower mutually agree to a compensation of the Grower based upon one or a combination of the following plans:

   a. Flat fee

      (1) Salary of $200 per week.
      (2) XXXXXXXXXX cents per week per salable pullet finished.

   b. Incentive plan:

      (1) Salability or livability

%	Bonus
98%	$300
95%	$200
90%	$100
Below 90%	none

2. Payment shall be made weekly (specify weekly, monthly, or at the end of growing period).

3. The Contractor may dispose of the pullets at his descretion, at any time between the ages of ________ and ________ weeks with or without consultation with the Grower. If the Contractor disposes of the pullets before ________ weeks or after ________ weeks, the Grower may submit any damage claims arising from such an occurrence to the Contractor and in the event of disagreement, to arbitration as outlined in Section 7.

4. Labor for catching birds to be sold will be furnished by the Contractor.

Section 6. Taxes and Insurance.

1. Personal property taxes shall be paid by the Producer party who holds title to several items. All employment and real estate taxes are the responsibility of the Grower.

ASSIGNMENT SHEET #3

2. Fire and extended coverage insurance on the pullets, feeds and supplies shall be carried out by the party who holds the title to the items and a copy of the policy submitted to the other party for inspection. Each party shall share in any proceeds in proportion to his contribution to the contract.

3. Other insurance: None

Section 7. Arbitration.

1. Disagreements not reconciled between the Contractor and the Grower shall be referred to a single arbitrator if agreeable to both parties, or if not agreeable, to a board of three financially disinterested persons after giving three days' notice to the other party. Arbitrators shall be familiar with the poultry industry and shall not be related to either party. One arbitrator shall be appointed by the Contractor, one by the Grower, and the third by the two thus appointed. The decision of the arbitrator or arbitrators shall be considered binding by the parties to this contract.

2. Any cost of arbitration shall be shared equally between the two parties to this contract.

Section 8. Breach of Contract.

1. If either party shall violate the terms of the contract, the other party shall have the right to continue the pullets to marketable age by supplying whatever item or service is in default, and making a regular charge, plus 20 percent for such item or service.

2. If the grower is in default in properly caring for the pullets, the Contractor may remove the pullets from the premises and place them with another Grower or, if this is not feasible, sell them. The Grower shall be entitled to a reasonable compensation for his property which was used and for services, less the expense of transfer or sale, and shall be further charged 20 percent of such costs before any compensation is paid.

3. Any disagreement as to amounts due may be submitted to arbitration in accordance with Section 7.

4. In the event of illness or death of either party making performance impossible and if agents or successors in interest are unable to complete the contract, the other party shall continue the contract, if practicable, and make reasonable charges for the extra expense involved but there shall be no special charge or penalty because of inability to perform due to illness or death.

Section 9. Assignment.

1. The Grower and the Contractor agree neither to assign this contract to any person(s) or entity nor turn care of said pullets over to anyone else without written consent of the other party. However, such consent shall not be unreasonably withheld if good cause is shown for the assignment.

ASSIGNMENT SHEET #3

Section 10. Other Agreements.

None

IN WITNESS WHEREOF, the parties place their signatures below.

(Date)	(Contractor)
	Amie Schenandoah
(Date)	(Grower)

State of Oklahoma, County of Adair. On this 3rd day of June, 1980, before me ______ personally appeared to me ______ known to the person(s) named in and who executed the foregoing instrument and acknowledged that ______ executed the same as ______ voluntary act and deed.

(Notary Public)

Used by permission of The Interstate Printers and Publishers from *Contract Farming and Economic Integration* by Ewell P. Roy, 1972, 2nd ed., pp. 207-211.

GENERAL MARKETING AND FORWARD CONTRACTS
UNIT V

ASSIGNMENT SHEET #4--EVALUATE A FORWARD CONTRACT FOR COTTON

NAME ______________________________ SCORE ______________

On the following pages are

1. A checklist for determining minimum provisions needed in forward contracts, and
2. A sample forward contract for cotton.

The checklist on the next page is needed for both the cooperator and contractor to enter into a sound contract.

(NOTE: This list is intended to provide a *minimum* guideline of points to consider in forward contracts. It does not include all points which should be considered.)

Evaluate the forward contract for cotton to determine if it contains the appropriate information. Make any comments for changing or correcting the contract at the bottom of the checklist page.

ASSIGNMENT SHEET #4

CHECKLIST FOR DETERMINING PROVISIONS NEEDED IN FORWARD CONTRACTS

Mark an "X" in the appropriate blanks.

	YES	NO
1. Is contract equitable and fair to both the cooperator and the contractor?		
2. Is contract in writing?		
3. Are parties to contract specified and addresses included?		
4. Is commodity to be exchanged identified?		
5. Is quantity of the commodity involved listed?		
6. Is how the commodity will be packaged described?		
7. Are any additional specifications listed?		
8. Is price per unit or method of determining price given?		
9. Are terms of payment specified?		
10. Is point and method of delivery named?		
11. Is time of delivery identified?		
12. Is there a provision for under or overdelivery?		
13. Are provisions made for breach of contract?		
14. Is there a statement that the commodity involved is free of all liens and encumbrances?		
15. Is there an arbitration clause to settle disputes which might arise?		

COMMENTS: ____________________

ASSIGNMENT SHEET #4

SAMPLE CONTRACT FOR COTTON

THIS CONTRACT made and entered into as of this 15th day of April, 19 81, at Altus, Oklahoma between William B. Litton of Eldorado, Oklahoma called "Seller", and Ace Grain Company Inc. of Galveston, Texas called "Buyer".

WITNESSETH:

IN CONSIDERATION of the mutual promises and obligations contained herein, sufficiency of which is acknowledged, the parties agree as follows:

1. Description of Acreage Contracted: On the terms and conditions and at the prices set forth below, Seller hereby sells and agrees to deliver and Buyer hereby purchases and agrees to take delivery of 50,000 lbs. or 100 bales of the acceptable cotton produced during the crop year 19 81 - 19 ___ on 160 acres situated in the State of Oklahoma more fully described below:

ASCS Farm No. Or Other Description	LOCATION County	NO. ACRES Contracted	
XXXXXXXXXX	Jackson County, OK	160 acres	

IF LANDLORD'S BALE SHARE IS NOT INCLUDED IN THIS CONTRACT, ONLY TENANT'S SHARE SHOULD BE SHOWN ABOVE.

If ASCS farm numbers are not available at the time of execution of this contract by Seller, or if farm numbers are changed, Seller agrees to furnish farm numbers and other related information immediately upon farm numbers being determined.

2. Acceptable Seed Varieties to be planted are: ____________________

3. Price and Other Terms: The prices to be paid for acceptable cotton shall be as follows: Based on basis at Galveston, Texas and December 1980 futures contract on the New York Cotton Exchange.

4. Ginning and Warehousing: The cotton to be ginned at Altus, Oklahoma
(name(s) and location(s) of gin(s))
and is to be warehoused at Altus, Oklahoma
(name(s) and location(s) of warehouse(s))

ASSIGNMENT SHEET #4

by Seller unless Buyer approves a change in writing, and all rebates given by the compress will be for the account of Seller.

5. Charges. All accrued charges (such as receiving and warehouse charges) to date of invoice are to be deducted from payment to Seller. Seller shall pay the Cotton Research and Promotion Fee. All rules of ______________________________
(exchange or association)
shall apply.

6. Invoicing. Seller agrees to invoice the cotton promptly as government class is received. Cotton is to be invoiced on warehouse receipts, net weights with official USDA class cards attached, and invoiced as follows:

____

7. Liens or Prior Interests. Seller acknowledges that the following, and only the following liens or prior interests (landlord's lien, landlord's crop share in bales, landlord's crop share in money, PCA, bank, prior crop contracts, etc.) are in effect against the production from the contracted areas to wit: ______________________________

None

Name Address Nature of Lien or Prior Interest

(Unless filled in, Seller warrants there are NONE.) Seller warrants that he will satisfy all liens from Buyer's payment for the cotton. If Seller's contracted acres are subject to a crop share in bales lease with his landlord, Seller should have his landlord join in signing below for Seller's protection, or limit amount in paragraph 1 to tenant's share, inasmuch as Seller absolutely warrants delivery to Buyer of the entire production described in paragraph 1.

8. Jurisdiction. It is acknowledged that this contract is accepted by Buyer in the State of Texas, and shall be governed by and interpreted in accordance with the laws of said State. Should any litigation arise out of or occur because of the breach of this contract, both parties agree to submit to the jurisdiction of any State or Federal court in the State of Texas empowered to hear and determine such dispute, with any non-resident party hereby agreeing that service of process by a judicial officer or by the Secretary of State of said State through registered mail shall be sufficient to establish personal jurisdiction.

9. General Terms Incorporated. This contract includes all of the General Terms set out on the reverse of this page. BOTH PARTIES HAVE CAREFULLY READ AND FULLY UNDERSTAND THE TERMS AND PROVISIONS CONTAINED ON THE FRONT AND BACK OF THIS CONTRACT, WHICH REPRESENTS THE ENTIRE AGREEMENT BETWEEN THE PARTIES, AND FURTHER UNDERSTAND THAT THERE MAY BE NO MODIFICATION OF THIS CONTRACT EXCEPT IN WRITING. TIME IS DEEMED TO BE OF THE ESSENCE IN THE PERFORMANCE OF THIS CONTRACT.

Witness our signatures as of the day and year first above written.

Seller William B. Litton	Buyer Ace Grain Company Inc.
By	By Joseph E. Smith
Witness: John W. Phillips	Witness: Bob Walsh
(Seller's Agent (if any))	(Buyer's Agent (if any))

Used by permission of the Alabama Agricultural Experiment Station/Auburn University from *Forward Contracting of Cotton* by Morris White and Michael A. Davis, 1979.

GENERAL MARKETING AND FORWARD CONTRACTS
UNIT V

ASSIGNMENT SHEET #5--EVALUATE FORWARD CONTRACTS FOR WHEAT

NAME ______________________________ SCORE ______________

On the following pages are

1. Checklists for determining the minimum provisions needed in forward contracts, and
2. Samples of forward contracts for wheat.

Checklists are before each sample contract and are needed for both the cooperator and contractor to enter into a sound contract.

(NOTE: These lists are intended to provide a *minimum* guideline of points to consider in forward contracts. They do not include all points which should be considered.)

Evaluate the forward contracts for wheat to determine if they contain the appropriate information. Make any comments for changing or correcting the contracts at the bottom of each checklist page.

ASSIGNMENT SHEET #5

CHECKLIST FOR DETERMINING PROVISIONS NEEDED IN FORWARD CONTRACTS

Mark an "X" in the appropriate blanks.

	YES	NO
1. Is contract equitable and fair to both the cooperator and the contractor?		
2. Is contract in writing?		
3. Are parties to contract specified and addresses included?		
4. Is commodity to be exchanged identified?		
5. Is quantity of the commodity involved listed?		
6. Is how commodity will be packaged described?		
7. Are any additional specifications listed?		
8. Is price per unit or method of determining price given?		
9. Are terms of payment specified?		
10. Is point and method of delivery named?		
11. Is time of delivery identified?		
12. Is there a provision for under or overdelivery?		
13. Are provisions made for breach of contract?		
14. Is there a statement that the commodity involved is free of all liens and encumbrances?		
15. Is there an arbitration clause to settle disputes which might arise?		

COMMENTS: ____________________

ASSIGNMENT SHEET #5

SAMPLE WHEAT PURCHASE CONTRACT

No. 000001

THIS AGREEMENT is entered into this 9th day of March 19 81, by and between:

Acme Grain Co. Inc., hereinafter referred to as Buyer; and
Bryan T. Sorens, hereinafter referred to as Seller, whether one or more.

WITNESSETH:

Buyer agrees to purchase from Seller 10,000 Bushels of WHEAT at a unit price of $ 3.90 per bushel, Basis No. 1 HW, less a unit charge of $0.01 cents per bushel for storage and less a unit charge of 1/4 cent per bushel for Oklahoma Wheat Commission. The total net consideration for all units delivered is $3.88 3/4, under the following terms and conditions, to wit:

1. Unless the above described grain is stored in the Buyer's grain storage facilitities, Seller shall deliver the grain to Buyer's elevator in Enid, Oklahoma on or before August 1, 1981.
2. The Seller represents that he has not sold or contracted to sell said commodity to anyone else. It is and will be kept free of security interests, liens, or other encumbrances, except the security interest held by First National Bank of Alva. In the event the grain is subject to a security interest, the Seller has the consent of the secured party to sell the grain and the Buyer's check in payment of the grain shall be payable to both the Seller and the secured party.
3. It is agreed that title to all units of said commodity passes immediately upon the execution of this Contract; and from this day forward, the Buyer shall have the right to deal with said property, free and clear of any claims or demands by the Seller except as herein specified.
4. Seller hereby acknowledges receipt of the sum or $10.00 to apply on this Contract and the balance of $38,865.00 shall not be due until the 1st day of August, 1981. It is specifically agreed that Seller shall, under no circumstances be entitled to the balance due herein until the above payment date.
5. Buyer agrees to pay the balance due without interest on the due date as fixed herein to the Seller.
6. Seller agrees that he shall not have the right or privilege to assign this Contract, nor to transfer, assign, or convey the proceeds or benefits accruing hereunder.
7. It is further agreed by and between the Buyer and Seller that this Contract shall be binding upon the heirs, successors, administrators, and executors of the respective parties.

Bryan T. Sorens
Seller

Acme Grain Co., Inc.
Buyer

Jack Boze
Witness

By Jill Williams
Authorized Representative

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ASSIGNMENT SHEET #5

CHECKLIST FOR DETERMINING PROVISIONS NEEDED IN FORWARD CONTRACTS

Mark an "X" in the appropriate blanks.

	YES	NO
1. Is contract equitable and fair to both the cooperator and the contractor?		
2. Is contract in writing?		
3. Are parties to contract specified and addresses included?		
4. Is commodity to be exchanged identified?		
5. Is quantity of the commodity involved listed?		
6. Is how commodity will be packaged described?		
7. Are any additional specifications listed?		
8. Is price per unit or method of determining price given?		
9. Are terms of payment specified?		
10. Is point and method of delivery named?		
11. Is time of delivery identified?		
12. Is there a provision for under or overdelivery?		
13. Are provisions made for breach of contract?		
14. Is there a statement that the commodity involved is free of all liens and encumbrances?		
15. Is there an arbitration clause to settle disputes which might arise?		

COMMENTS:

ASSIGNMENT SHEET #5

SAMPLE WHEAT SALES CONTRACT FOR FUTURE DELIVERY

THIS AGREEMENT made and entered into this 12th day of April, 1981, by and between:
ACME Grain Co. Webber Falls, Oklahoma, hereinafter referred to as BUYER; and
Deborah T. Truitt Rt. 5 Wewoka, Oklahoma, hereinafter referred to as SELLER.

For and in consideration of the sum of Ten and No/100 ($10.00) Dollars and other valuable consideration the receipt of which is hereby acknowledged by Seller to apply on this Contract, Buyer agrees to purchase and Seller agrees to sell and deliver to the Buyer's grain elevator ________ bushels of hard winter wheat at $________ per bushel, Basis No. 1 HW, subject to the following conditions:

It is agreed by Seller that if conditions beyond control of Buyer cause delay in shipment which results in reduction of price, the Seller will assume the reduction.

It is further agreed that if conditions beyond the control of Buyer causes inability to receive grain from Seller, this Contract is void at the option of the Seller, to the extent of that grain not delivered.

All of said wheat must be delivered at the elevator of Buyer on or before the delivery date of August 2, 1981.

Payment required herein by Buyer to Seller shall be made in the following manner:
Payment in full at delivery.

If the Seller is unable or unwilling to deliver the above wheat on or before the delivery date, he shall pay to the Buyer the difference between the price of the wheat stated in this Contract and the price of the wheat on the Contract Delivery date, if the latter is higher, plus an additional sum of $0.10 per bushel. The price of the wheat on the Contract Delivery date shall mean the regular price posted at 2 o'clock on the Delivery date, in the Buyer's grain elevator specified as the delivery point for this wheat.

If the cash price of wheat at the place of delivery is lower than the price stated herein, then in that event this contract may be voided at Seller's option by endorsement hereto.

This wheat is subject to a security interest held by: Production Credit Association, McAlester, Oklahoma.
Consent of secured party ________________.

It is further agreed that this contract shall be binding upon the heirs, executors, administrators, successors, and assigns of the parties hereto.

Gregory E. Pierce Witness	By Acme Grain Co., Inc. Buyer
Robert G. Patton Witness	(Jill Williams) By Deborah T. Truitt Seller

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GENERAL MARKETING AND FORWARD CONTRACTS
UNIT V

ASSIGNMENT SHEET #6--EVALUATE A CATTLE FEEDING CONTRACT

NAME ______________________ SCORE ____________

The sample cattle feeding contract in this assignment sheet is merely an example of one of the many types of contracts available. Cooperators should become familiar with the types of forward contracts offered in their major commodities.

The following contract questionnaire was developed as a decision aid in providing checkpoints necessary for both the cooperator and contractor to enter into a sound contract. There may be questions which should be added in some sections and there may be some sections or questions which will not apply to a certain type of contract.

Before signing any contract, always have a competent attorney examine the contract.

Using the contract questionnaire, evaluate the sample cattle feeding contract to determine if the contract contains the appropriate information. Mark an "X" in the appropriate blanks for questions requiring a "Y" for yes, "N" for no, or NA if it does not apply; some questions will require a written answer.

(NOTE: Some questions or sections of the contract questionnaire will not apply to the cattle feeding contract.)

ASSIGNMENT SHEET #6

CONTRACT QUESTIONNAIRE

	YES	NO	N/A
1. PARTIES AND ADDRESSES A. Is correct identity and location of each party stated?			
B. Is cooperator the owner?			
C. If cooperator is not owner, is the name and address of owner stated?			
D. Is name and address of each party correctly stated?			
E. Can contract be assigned to a third party?			
F. If so, under what circumstances? ______________ ______________________________	▨	▨	▨
2. EXECUTION OF CONTRACT A. Is contract signed by all parties?			
B. Is contract properly acknowledged, notarized, and witnessed?			
C. Is date of execution stated?			
D. Is address of execution stated?			
E. Is the contract going to be recorded at the county courthouse?			
F. Will each party have a copy of the contract?			
G. Will contract be reviewed by an attorney?			
3. CONTRACT DURATION A. Is the length of the contract stated?			
B. Are the options for contract renewal clearly stated?			
C. Are both starting and terminating dates stated?			

ASSIGNMENT SHEET #6

	YES	NO	N/A
4. RELATIONSHIP OF PARTIES A. Is the relationship between the parties clearly stated? Examples: Promisor-promisee; bailor-bailee; joint venture; agent; independent contractor			
B. If the contractor takes over the commodity while in production, are the rights of cooperator and contractor clearly stated?			
C. Who has title to the crop, livestock, or poultry? ____________________ ____________________			
D. What happens in case of illness or death of either party? ____________________ ____________________			
5. EXCLUSIVENESS OF CONTRACT A. Is cooperator permitted to deliver and sell to a party or parties other than the contractor?			
B. If yes, under what conditions? __________ ____________________			
6. ACREAGE OR FACILITIES USED A. Is there a legal description of the land or facilities to be used?			
B. Do both parties agree on the land or facilities to be used in performance of the contract?			
C. Is there a minimum acreage of minimum size herd stated?			

ASSIGNMENT SHEET #6

	YES	NO	N/A
7. PRODUCTION PROGRAM A. Who has the duty to do what in the production plan? ________ ________			
B. What are the rights of the contractor to enter the cooperator's premises and fulfill the contract? ___ ________			
C. Who supplies what, how much, and at what price? ________ ________			
D. Who decides timing of various production practices? ________			
E. What standards of performance are expected of the cooperator? ________ ________			
F. What are the credit terms, if any? ________ ________ ________			
8. SEEDS, FERTILIZERS, INSECT CONTROL A. Is variety stated?			
B. Is seed source specified?			
C. What is warranty on seed? ________			
D. Is contractor liable for inferior seed?			
E. Who selects the fertilizer, determines the amount to be used, and makes payment for and delivery of the fertilizer? ________ ________ ________			

ASSIGNMENT SHEET #6

	YES	NO	N/A
F. Who decides on insect control? ____________			
G. Who selects the insecticides, determines the amount to be used, and makes payment for and delivery of insecticides? ____________ ____________ ____________			
H. Who is liable for damage resulting from insect control procedures? ____________			
I. How is crop loss to be handled? ____________ ____________			
9. CHICKS, FEEDERS, FEED, AND MEDICINES A. Is breed and/or strain of animal stated?			
B. Is feed source specified?			
C. Who delivers feed and how frequently? ____________ ____________			
D. Who medicates flock or herd, under what conditions, and at what costs? ____________ ____________			
E. Who is liable in case of adulterated feed, impotent medicines, or diseased animals? ____________			
F. How are death losses to be handled? ____________ ____________			
10. DISPOSAL OF BY-PRODUCTS A. To whom do by-products of production belong? ____________			
B. If they belong to the contractor, can the cooperator purchase or use them?			

ASSIGNMENT SHEET #6

	YES	NO	N/A
11. GRADING OF PRODUCT A. Who is to grade the product produced? ________			
B. What are the grading standards? ________			
C. Who pays for grading? ________			
D. What are cooperator's rights in refusing to accept the grade? ________			
E. How is grade related to price paid for the product? ________			
F. Will cooperator be furnished copies of all grading reports?			
12. REJECTIONS OF PRODUCT A. To whom do rejects belong? ________			
B. Who absorbs cost of rejects? ________			
C. What disposal shall be made of rejects? ________			
D. Can contractor pass up a product ready for marketing, and what is the liability therein? ________			
13. MARKETING PROGRAM A. Who has the duty to market the product? ________			
B. How and where shall it be marketed? ________			

ASSIGNMENT SHEET #6

	YES	NO	N/A
C. How shall product be transported? ____________			
D. Who shall bear cost of marketing? ____________			
E. Who shall decide time and place of marketing? ________________________________			
F. What kind of marketing services shall be supplied by each party? ____________________ ________________________________			
14. PRICING OF PRODUCT A. What unit shall be used for pricing? ____________			
B. Will different grades bring different prices?			
C. Which market shall be used for pricing purposes? ________________________________			
D. What weight and which scale shall be used as the basis for pricing? ____________________ ________________________________			
E. How will the rate of payment be calculated? ____ ________________________________			
F. If deductions are made from the cooperator's payment to satisfy debts or advances, what is the maximum which can be deducted? ____________ ________________________________			
15. ARBITRATION OF DISPUTES A. Are there provisions to settle disputes through arbitration?			
B. Is arbitration binding?			
C. How is arbitration to be conducted? ____________ ________________________________			

ASSIGNMENT SHEET #6

	YES	NO	N/A
16. INSURANCE AND TAXES			
A. How much and what type of insurance must each party have? ______________			
B. Who pays premiums, and is a loss-payable clause necessary? ______________			
C. Who is responsible for payment of taxes on real estate, personal property, sales, income? ______________			
17. PROVISIONS FOR PERFORMANCE			
A. Are there specific conditions which will excuse either the contractor or cooperator from completing the contract?			
B. How will the contract be handled and penalties assessed in event of excuse of performance of either party? ______________			
C. What happens if either party does not perform as provided for in the contract? ______________			
D. What are the remedies available to the grieved party? ______________			
18. CANCELLATION			
A. Does either party have a right to cancel the contract and under what conditions? ______________			

ASSIGNMENT SHEET #6

	YES	NO	N/A
B. How long must written notice be given before cancellation? ____________	▨	▨	▨
C. Are there any provisions to settle disputes arising over cancellation?			
19. OPERATING DETAILS A. Besides the contract itself, is cooperator aware of the other party's production and marketing program customarily practiced?			
B. If not, are written copies furnished by the cooperator and made part of the contract?			

ASSIGNMENT SHEET #6

SAMPLE CATTLE FEEDING CONTRACT

This contract is entered into this 1st day of March, 1981, by and between Jim Steward of Stillwater, OK, hereinafter called the OWNER, and P & K Feedlot of Perkins, OK, hereinafter called the FEEDER.

Section 1. The OWNER agrees:

1. To deliver to the FEEDER f.o.b. at Perkins, about 100 head of feeder steers branded Circle J, free of "culls," "bums," "dogs," "locos," or otherwise objectionable feeding animals as determined by the Feeder, between the 15th day of March, 1980, and the 1st day of April, 1981. All animals are to weigh between 600 pounds and 700 pounds, the average weight being not less than 625 pounds or more than 675 pounds per head.

2. To guarantee the said animals to have been off feed and water for a period of at least twelve hours immediately prior to weighing and that these animals shall be dry when weighed.

3. To secure the consent of the mortgages to this contract if the said animals are mortgaged and to attach such consent hereto.

4. To have payment made by joint agreement directly to the FEEDER by the commission agency handling the sale of these said animals at the market: S & C Commission Company.

Section 2. The FEEDER agrees:

1. To take possession of said animals at FEEDLOT and to accept weights of said animals at Perkins 'Y' Auction.

2. To feed said animals at FEEDER'S farm located 6 miles from Perkins, OK.

3. To shelter, care for and bed said animals and to feed them in the manner designated in paragraph 4 of the joint agreement.

4. To sort out and deliver said animals to National Stockyards, Oklahoma City in merchantable lots as they, in the opinion of the commission firm handling the animals, become fat. Transport and shrink provisions shall include a 3% shrink not to exceed 30 pounds.

5. To secure the consent of the mortgagee to this contract if the feed is mortgaged and attach same hereto ____________________.

Section 3. It is jointly agreed that:

1. Copy of the original weights of said animals at Perkins 'Y' Auction shall be attached to and become a part of this contract.

2. Freight charges shall be advanced by J & K Trucking, Stillwater, OK to be later deducted with interest at 15 percent from the gross sale proceeds of the animals at market before either of the contracting parties participates in the returns.

ASSIGNMENT SHEET #6

3. Said animals are to be marketed through S & C commission firm at National Stockyards, Oklahoma City, OK unless otherwise mutually agreed.

4. The said animals shall be fed, for 150 days in a manner appropriate to fatten rather than grow them, unless otherwise agreed. If said animals gain on the average more than 3.0 pounds per head per day, a bonus of 2 cents per hundredweight of gain shall be paid the FEEDER by the OWNER.

5. Veterinary charges and death loss shall be divided equally, and the FEEDER shall skin all dead animals upon request and present the hide as evidence. The hide shall become the property of OWNER.

6. Any taxes on cattle, real or otherwise, shall be borne by OWNER.

7. The said animals shall not be fed at any public feeding station while in transit to market.

8. The method of payment and manner of determining charges between the FEEDER and OWNER shall be stipulated in Section IV.

9. Management of calves to be responsibility of FEEDER, with the right of OWNER to look over and observe steers and make feeding and management suggestions. OWNER will be available upon call if FEEDER needs help with calves.

10. If, at any time, OWNER feels that FEEDER is defaulting in his agreement to take proper care of the cattle, OWNER has the right to take cattle and pay the FEEDER the amount of gain that has been put on to that date.

11. It is stipulated and agreed that title and ownership of the cattle shall remain in OWNER'S NAME, but that the FEEDER shall exercise the highest degree of care in protecting the cattle and shall be liable for any and all losses occasioned whether by way of theft, conversion, unexplained loss or otherwise, except as hereinbefore provided as to death losses.

12. It is further stipulated and agreed that the FEEDER shall provide proper enclosures and fences for the cattle and shall hold OWNER harmless from any and all causes of action occasioned by any trespass of the cattle.

13. The FEEDER shall not sell, assign, transfer, or otherwise dispose of any of the cattle or his interest in this agreement without the express written consent of OWNER.

Section 4. Flat fee per pound of gain.

1. After the marketing costs and freight have been deducted from the gross proceeds of the sale of said animals, the contracting parties shall be entitled to payments out of remaining sum as follows:

a. Mortgagees whose consents are attached to this contract shall be paid according to the terms expressed in such consents.

b. Next, the FEEDER shall receive $45 dollars per hundredweight for the gain he has added to said animals. This sum, except as modified by paragraphs 4 and 5 under Section III and paragraph 1, Section IV, shall be paid directly to the FEEDER by the

ASSIGNMENT SHEET #6

commission firm selling said animals. The gain shall be based upon the difference in the original weight of said animals at Perkins 'Y' Auction and the finished weight of said animals at National Stockyards .

Section 5. Other agreements.

1. In the event that the FEEDER at any time materially fails to carry out his obligations under this contract, the OWNER shall be entitled to resume possession of said animals without accountablility for the feed and labor used to gain produced, except as follows: Pay the feeder for amount of gain put on to that date . The OWNER shall also be entitled to assert all other contract and property rights otherwise available to him by law.

2. Nothing in this contract shall ever be construed as creating a partnership between the FEEDER and OWNER.

3. For arbitration of disagreements, the parties will each appoint a party to represent him and the two appointed will select a third party. The three persons so chosen will consider and decide on solution to points of disagreement.

Amie Schenandoah Witness	Jim Steward Owner
Greg Pierce Witness	P & K Feedlot Feeder
	By Keith Harp

Section 6. Notarize and record.

State of Oklahoma , County of Payne :

Personally appeared before me, a Notary Public within and for said state and county , the above names Jim Steward and Keith Harp , the parties to the foregoing contract, who each acknowledged the signing thereof to be his voluntary act and deed, for the uses and purposes therein mentioned.

IN WITNESS WHEREOF, I have hereunto set my hand and seal this 1st day of March , 1981.

Debbie Griffith
Notary Public, Payne County, OK

GENERAL MARKETING AND FORWARD CONTRACTS
UNIT V

ANSWERS TO ASSIGNMENT SHEETS

Assignment Sheet #1

1. Yes
2. Yes
3. Yes
4. Yes
5. Yes
6. Yes
7. Yes
8. Yes
9. Yes
10. Yes
11. Yes
12. Yes
13. Yes
14. Yes
15. Yes

Comments: Contract is considered good and nothing further needs to be done to it

Assignment Sheet #2

1. Yes
2. Yes
3. Yes
4. Yes
5. Yes
6. Yes
7. Yes
8. Yes
9. Yes
10. Yes
11. No
12. Yes
13. Yes
14. Yes
15. Yes

Comments:

a. Section 1, paragraph 2--No date is specified for pigs to be placed on the farm.

b. Section 2, paragraph 2--Types of equipment and supplies which producer agrees to produce are not specified

c. Section 3, paragraph 7--Refers to delivery of market hogs, but gives no marketing or termination dates; there are no market weights specified

Assignment Sheet #3

1. Yes
2. Yes
3. No
4. Yes
5. Yes
6. Yes
7. Yes
8. Yes
9. Yes
10. Yes
11. No
12. Yes
13. Yes
14. Yes
15. Yes

Comments:

a. Section 1, paragraph 1–Date, names of parties involved and their addresses are not included

b. Section 5, paragraph 3–Date of disposal, as well as age of chicks at disposal, are not specific

c. Section 10--Contractor did not sign or date contract. Grower also did not date contract. Contract is not witnessed or notarized

Assignment Sheet #4

1. Yes
2. Yes
3. No
4. Yes
5. Yes
6. Yes
7. No
8. Yes
9. No
10. Yes
11. Yes
12. No
13. Yes
14. Yes
15. Yes

Comments:

a. Paragraph 2--Acceptable seed varieties are not specified

b. Paragraph 5--No specifications where cotton research and promotion fee is to be paid

c. Paragraph 6–No information on invoicing cotton after it is officially graded and classified is included

d. There are no dates as to when final payments will be made to cooperator

e. There is no provision in the contract (except for paragraph 8--Jurisdiction) which provides for under delivery of the specific amount in the case of a crop failure

Assignment Sheet #5

A. Sample Wheat Purchase Contract

1. Yes
2. Yes
3. Yes
4. Yes
5. Yes
6. Yes
7. Yes
8. Yes
9. Yes
10. Yes
11. Yes
12. No
13. No
14. Yes
15. No

Comments:

(NOTE: This is basically a good contract since the wheat is available and changes title immediately upon execution of contract.)

a. An arbitration clause and breach of contract clause should be added

b. A provision for underdelivery should be added

(NOTE: Underdelivery would only occur if grain was stored in seller's grain bin and the quantity was not estimated correctly.)

B. Sample Wheat Sales Contract for Future Delivery

1. Yes
2. Yes
3. Yes
4. Yes
5. No
6. Yes
7. Yes
8. No
9. Yes
10. Yes
11. Yes
12. Yes
13. Yes
14. Yes
15. No

Comments:

a. Paragraph 2--Does not specify the amount of grain to be sold or the contract price

b. Consent of secured party's signature is missing

c. There should be an arbitration clause to settle disputes

Assignment Sheet #6

1. A. Yes
   B. Yes
   C. NA
   D. Yes
   E. No
   F. Does not apply
2. A. Yes
   B. Yes
   C. Yes
   D. Yes
   E. Yes
   F. Yes
   G. Yes

3. A. Yes

   B. No

   (NOTE: Contract will be terminated at end of feeding period.)

   C. Yes

4. A. Yes (owner-feeder)

   B. Yes

   C. Owner

   D. No clause in this contract allowing for death or illness of either party; one may wish to add a clause binding heirs, and so on

5. A. NA

   B. Does not apply

6. A. No

   B. Yes

   C. Yes

7. A. FEEDER agrees to feed, shelter, care for and bed steers; OWNER agrees to look over and observe steers and make feeding and management suggestions

   B. Contract will be fulfilled on FEEDERS premises

   C. FEEDER supplies labor, feed, shelter and management for a fee of $45 per cwt. gain with 2 cents per cwt bonus on average gain of more than 3.0 pounds per head per day; OWNER supplies 100 steers and pays the taxes

   D. FEEDER decides timing considering OWNER'S suggestions

   E. Steers should be marketable in 150 days

   F. None stated

8. This section does not apply to this contract

9. A. NA

   B. Yes (FEEDER supplies)

   C. Determined by FEEDER

   D. FEEDER is responsible for medication with vet charges divided equally

E. Not stated in contract

F. Death losses shall be divided equally

10. A. Not stated

B. NA

11. A. National Stockyards

B. USDA (not stated as such in contract)

C. Owner

D. None

E. Does not apply

F. Yes

12. Does not apply to this contract

13. A. FEEDER will sort out and deliver animals to National Stockyards where S & C commission firm will handle sale

B. S & C Commission firm; National Stockyard, Oklahoma City

C. J & K Trucking, Stillwater, OK

D. Owner

E. S & C Commission Firm in cooperation with FEEDER

F. FEEDER will sort out and deliver animals

OWNER will pay trucking and commission fees

14. A. Flat fee $45 per cwt. gained

B. No

C. National Stockyards, Oklahoma City

D. Beginning-Perkins 'Y' Auction; Finish-National Stockyards

E. Flat fee of $45 per cwt. gained plus a bonus of 2 cents per cwt. if steers gain on the averate more than 3.0 pounds per head per day

F. Section 4, paragraph a--Mortgages whose consents are attached to this contract shall be paid according to the terms expressed in such consents

15. A. Yes

B. Yes

C. See Section V, paragraph 3

16. A. Not stated in contract
    B. Not stated in contract
    C. Owner
17. A. Yes
    B. See Section III, paragraph 10, and Section V, paragraph I
    C. See Section V, paragraph I
    D. See Section V, paragraph III (arbitration)
18. A. Yes; see Section III, paragraph 10, and Section V, paragraph I
    B. None stated
    C. Yes
19. A. Yes (assumed)
    B. Yes (assumed)

GENERAL MARKETING AND FORWARD CONTRACTS
UNIT V

TEST

NAME ________________________________ SCORE ______________

1. Match terms associated with general marketing and forward contracts to the correct definitions. Write the correct numbers in the blanks provided.

_____a. Economics and behavioral activities which are involved in coordinating various stages of economic activity from production to consumption

_____b. Goods that can be bought and/or sold

_____c. Legally enforceable arrangement between two or more parties

_____d. Establishment of a price before delivery for some commodity; allows producer to shift some or all of the price risk associated with production to someone else

_____e. That area or space wherein the supply and demand forces can work

_____f. Amount or quantity of commodity or services that would be offered for sale by a producer or supplier in a given market at a given series of prices over a given period of time

_____g. Person or firm who finally utilizes or consumes a commodity

_____h. Commodity productivity is less than expected

_____i. Usefulness of a commodity as measured by its ability to satisfy "want"

_____j. Changes in price which tend to follow a similar pattern within a year

_____k. Chance of a loss coming from the market place

_____l. Relationship between a commodity's price and the quantity of the commodity which consumers are willing to purchase

1. Forward pricing
2. Production risk
3. Utility
4. Marketing
5. Contract
6. Market
7. Supply
8. Commodity
9. Ultimate consumer
10. Market risk
11. Price seasonality
12. Demand
13. Seller
14. Free market
15. Price cycle
16. Producer marketing
17. Surplus
18. Producer
19. Buyer

_____m. Person or firm who either produces, manufactures, or creates utility in a commodity or a service as it moves through the marketing channel

_____n. Condition that exists when supply is greater than demand at some given price

_____o. Supplier of a commodity offered for sale or exchange

_____p. Producer making sell or purchase decisions

_____q. Changes in price which tend to follow a similar pattern over a period of years

_____r. Purchaser of a commodity offered for sale or exchange

_____s. Market where there is a true interaction of supply and demand without interference of government controls, tariffs, monopolies, or other artificial barriers to the supply and demand of a commodity

2. State benefits of producer marketing. Write your answer in the blanks provided.

a. ______________________________

b. ______________________________

c. ______________________________

d. ______________________________

3. State types of buying and selling. Write your answer in the blanks provided.

a. Buying

1) ______________________________

2) ______________________________

3) ______________________________

b. Selling

1) ______________________________

2) ______________________________

3) ______________________________

4. Select from the list below purposes of forward pricing. Mark each correct answer with an "X" in the blanks provided.

_____a. Increases marketing risk

_____b. Enables producers to exchange market risk for production risk

_____c. Increases price received for products

_____d. Establishes a more certain price for products

_____e. Reduces marketing risk

_____f. Tries to get a higher price

5. Distinguish between methods of forward pricing. Write in the correct blanks an "FW" for forward contracts and an "FT" for futures contracts.

_____a. There is a guaranteed margin which could be converted to a price equivalent

_____b. Initiation of a position in a futures market that is intended as a temporary substitute for the sale or purchase of a commodity

_____c. Agreement between buyer and seller

_____d. Details price that is paid for the product, delivery time of the product, specifications of quality or grade, and location of weighing and delivery point

_____e. Standard contract forms that are traded at a central location to establish a forward price

6. Select from the list below advantages of forward contracts compared to futures market contracts. Mark each correct answer with an "X" in the blanks provided.

_____a. An exact price for the cooperator's production is specified, whereas the hedger must be concerned with basis fluctuations

_____b. Highest price for the product is always insured

_____c. Sizes are set and allow the greatest planning advantage

_____d. Prepayment is sometimes provided

_____e. Sizes are usually negotiable

7. State essential elements of a legal contract. Write your answer in the blanks provided.

a. ______________________________

b. ______________________________

c. ______________________________

d. ______________________________

8. Distinguish between types of contracts. Mark an "X" in the blank denoting an *expressed* contract.

_____a. Parties state terms of contract in writing

_____b. Actions or conduct of parties indicate an intention to contract

9. Select from the list below contracts required by the Statute of Frauds to be in writing. Mark each correct answer with an "X" in the blanks provided.

_____a. Every special promise made by an executor or administrator to answer damages out of his or her own estate

_____b. Every agreement, promise, or contract to pay any commission for or upon sale of any interest in real estate

_____c. Every agreement, promise, or undertaking made upon consideration of marriage, except mutual promises to marry

_____d. Every agreement that by its terms is to be performed in less than one year from the making thereof

_____e. Every special promise to answer for the debt, default, or misdoing of another person

_____f. Every agreement that by its terms is not to be performed in one year from the making thereof

10. Select from the list below points to consider in deciding to contract. Mark each correct answer with an "X" in the blanks provided.

_____a. Always rush into the contract so you will at least be under contract and won't be left out

_____b. Estimate production costs

_____c. Estimate depreciation on contract

_____d. Determine what market is offering

_____e. Estimate returns to management

_____f. Make sure contract is slanted in your direction

_____g. Determine when to contract

_____h. Know the contractor and ask for financial statements

_____i. Let contractor rush you into signing; this is a sign of good intentions

_____j. Receive expert analysis on the contract; contact an attorney

_____k. Investigate the contractor to determine past reliability

_____l. Do not let contractor rush you into signing contract

_____m. Proceed with the contract if it is still desired after all questions are answered satisfactorily

11. State four possible shortcomings of forward contracts. Write your answer in the blanks provided.

    a. ____________________

    ____

    b. ____________________

    ____

    c. ____________________

    ____

    d. ____________________

    ____

12. Select from the list below minimum provisions needed in forward contracts. Mark each correct answer with an "X" in the blanks provided.

    _____a. Contract is oral

    _____b. How commodity will be packaged is described

    _____c. Any additional specifications are listed

    _____d. Parties to contract are not specified

    _____e. Commodity being exchanged does not have to be identified because both parties already know what the contract is for

    _____f. Parties to contract are specified

    _____g. Price is left up to buyer's discretion

    _____h. Price per unit or method of determining price is given

    _____i. Quantity of commodity involved is listed

    _____j. Contract is in writing

    _____k. Time of delivery is left up to seller

    _____l. Terms of payment are specified

    _____m. Point and method of delivery is named

    _____n. Time of delivery is identified

    _____o. Commodity being exchanged is identified

13. State four guidelines for developing a specific contract. Write your answer in the blanks provided.

a. ______

b. ______

c. ______

d. ______

14. Select from the list below characteristics needed for good forward contracts. Mark each correct answer with an "X" in the blanks provided.

______a. Contracts should be equitable to both buyer and seller

______b. Guidelines for developing a specific contract should be followed

______c. Always tilt contract as much in your favor as possible

______d. Minimum provisions must be included

15. Name economic factors affecting forward pricing decisions. Write your answer in the blanks provided.

a. ______

b. ______

c. ______

d. ______

e. ______

f. ______

g. ______

h. ______

16. Select from the list below characteristics of beef cattle contracts. Mark each correct answer with an "X" in the blanks provided.

______a. Contracts are used mainly to buy slaughter cattle

______b. Some contracts specify certain production practices must be followed

______c. Contracts are used extensively with canner and cutter cattle transactions

______d. Contracts generally will call for delivery at some specified future date after signing the agreement

______e. Contracts are mainly used to buy and sell feeder cattle

______f. Lower marketing costs, less handling, and personal contracts with producers may exist in relation to beef cattle contract use

17. Discuss characteristics of slaughter hog contracts. Write your answer in the blanks provided.

____

____

____

____

____

____

____

____

____

____

____

____

____

____

18. Distinguish between points usually specified in beef cattle and slaughter hog contracts. Write in the correct blanks a "B" for beef cattle contracts and an "H" for slaughter hog contracts.

______a. Sex

______b. Length of time for the agreement to be in effect

______c. Weight

______d. Price at delivery

______e. Amount of partial payment involved

______f. Provisions covering the number of barrows and gilts to be delivered

______g. Acceptable assortment of weights and grades

______h. Description and location of cattle

______i. Delivery rate

______j. Free on Board (FOB) delivery point

______k. Allowable ten percent cut for the buyer to sort out undesirable animals

______l. Delivery date and locations

_____m. Percentage shrink

_____n. Base price for acceptable assortments

_____o. Scales to be used to determine rate

_____p. Partial payment provisions

_____q. Health and brand certificates furnished by seller

_____r. Remedies for breach of contract

19. Select from the list below characteristics of feeder pig contracts. Mark each correct answer with an "X" in the blanks provided.

_____a. Contracts are used in conjunction with the selling of feeder pigs by the producer to a marketing agent

_____b. Contracts that are the most popular in the southern section of the United States

_____c. Producers supply none of the production inputs

_____d. Producers believe grading, marketing service, or technical knowledge supplied by the marketing agency are worth the fees paid to the marketing agent

_____e. Producers supply all production inputs

_____f. Prices received for feeder pigs may be related to market hog prices, but price is generally the market price for pigs

20. State points usually contained in feeder pig contracts. Write your answer in the blanks below.

a. ____

____

b. ____

____

c. ____

____

d. ____

____

e. ____

____

21. Discuss characteristics of poultry producer contracts. Write your answer in the blanks provided.

22. Select from the list below characteristics of cotton contracts. Mark each correct answer with an "X" in the blanks provided.

_____a. Contracts commonly used in the northeasern part of the United States

_____b. Price is usually related to a stated quality and quantity

_____c. Price is always related to Gulf quotes

_____d. Required production practices may range from a minimum of only prohibiting certain harvesting practices and using a defoliant prior to harvesting to detailed descriptions of ginning practices and specifying varieties to be grown

_____e. Contracts, in most cases, will specify the sale of cotton produced on a specified number of acres

_____f. Percentage of cotton crops contracted by producers generally depends on future price expectations

_____g. Special provisions will always be needed for California cotton growers because of California state laws

_____h. Contracts, generally, will be between producers and cotton merchants, but in some areas local ginners will contract with growers

_____i. Contracts are used in most southeastern and southwestern parts of the United States

_____j. Price always will be 15¢ above local estimates

23. Match type of cash grain contracts to the correct descriptions. Write the correct numbers in the blanks provided.

    _____a. Stipulate amount, quality, time of delivery, and other obligations which may be found in a fixed price agreement

    _____b. Allow cash to be advanced to the producer at delivery and as grain is sold during the years as additional price settlements are made with producers

    _____c. Stipulate the commodity the producer agrees to deliver to the buyer, time of delivery, and price

    1. Pooled sales contracts
    2. Deferred price agreements
    3. Fixed price agreements

24. Evaluate a forward contract for feeder cattle.

25. Evaluate a forward contract for market hogs.

26. Evaluate a forward contract for growing pullets.

27. Evaluate a forward contract for cotton.

28. Evaluate forward contracts for wheat.

29. Evaluate a cattle feeding contract.

(NOTE: If any of the above activities have not been done before the test, ask your instructor when they should be finished.)

GENERAL MARKETING AND FORWARD CONTRACTS
UNIT V

ANSWERS TO TEST

1. a. 4
   b. 8
   c. 5
   d. 1
   e. 6
   f. 7
   g. 9
   h. 2
   i. 3
   j. 11
   k. 10
   l. 12
   m. 18
   n. 17
   o. 13
   p. 16
   q. 15
   r. 19
   s. 14

2. a. Gives cooperator economic gains
   b. Lowers cost per unit
   c. Increases output per dollar
   d. Gives a better quality product

3. a. Buying
      1) According to time
      2) According to location
      3) According to form
   b. Selling
      1) According to time
      2) According to location
      3) According to form

4. b, d, e, f

5. a. FT
   b. FT
   c. FW
   d. FW
   e. FT
6. a, d, e
7. a. Two or more legal parties
   b. Offer and acceptance
   c. Sufficient consideration
   d. Must not offend public policy or morals
8. a
9. a, b, c, e, f
10. b, d, e, g, h, j, k, l, m
11. Answer should include any four of the following:
    a. Lack of mutuality of responsibilities
    b. Overemphasis on uniform contracts rather than on equitable contracts
    c. Lack of sufficient details on duties and responsibilities of each party
    d. Lack of clarity as to methods of pricing, grading, and payment
    e. Insufficient documentation of methods used to calculate gross and net payments
    f. Lack of orderly procedures for handling grievances
    g. Tying clauses which force cooperators to procure inputs exclusively from contractors
    h. Too short of term contracts which fail to correspond to life of fixed investment
    i. Shifting risks from one party to another without renumeration
    j. Excessive control by one party over another
    k. Refusal of most contractors to bargain collectively
    l. Vagueness and complication of many contracts
    m. Requiring cooperators to borrow funds for contractors' use

   n. Encouraging new cooperators while restricting expansion of established cooperators

   o. Delays in making payments to cooperators

12. b, c, f, h, i, j, l, m, n, o

13. Answer should include any four of the following:

   a. Use straightforward language

   b. Include names and addresses of buyers and sellers

   c. Specify quantity

   d. Express specified quantity in the same terms as the U.S. standards for the commodity

   e. Specify place and time of delivery, and alternative delivery points if the designated receiving facility is closed temporarily

   f. Include a statement that the crop or livestock is free from all liens and encumbrances

   g. State provisions for under or overdelivery

   h. Include a liquidated damages clause in case of breach of contract

   i. Attach the *Uniform Commercial Code*, if desired

   j. Include an arbitration clause to settle disputes which might arise

14. a, b, d

15. a. Expected prices

   b. Markets

   c. Credit

   d. Management

   e. Labor

   f. Market competition

   g. Farm size

   h. Technology

16. b, d, e, f

17. Discussion should include:

   a. These contracts are usually created between meat packers and individual hog producers for a specified amount of market hogs to be delivered at a future date at a specified price

b. Packers may use these contracts to improve scheduling and quality of purchases

c. Producers, generally, are interested in these types of contracts when prices are predicted to decline or when hog prices have been low for a period of time

18. a. B

b. H

c. B

d. B

e. B

f. H

g. H

h. B

i. B

j. B

k. B

l. H

m. B

n. H

o. B

p. H

q. B

r. H

19. a, d, e, f

20. a. Producers agree to market all pigs through the marketing agency

b. Marketing agent agrees to sell the pigs for the producers for a specified fee

c. Time and place of marketing are specified

d. Specific management practices relating to health and weight of pigs must be followed

e. Field of supervision and technical assistance may be provided by larger marketing agents

21. Discussion should include:

a. Contracts usually are used by major poultry processors and producers who basically act as contracted labor

b. The most widely used contract is called the *flat fee plan*

c. An *open account plan* also is used between producer and contractor and may be written or oral

22. b, d, e, f, h, i

23. a. 2

b. 1

c. 3

24. Evaluated to satisfaction of instructor
25. Evaluated to satisfaction of instructor
26. Evaluated to satisfaction of instructor
27. Evaluated to satisfaction of instructor
28. Evaluated to satisfaction of instructor
29. Evaluated to satisfaction of instructor

HEDGING
UNIT VI

UNIT OBJECTIVE

After completion of this unit, the cooperator should be able to complete commodity futures market hedging transactions. This knowledge will be evidenced through completion of assignment sheets and the unit test with a minimum of 85 percent accuracy.

SPECIFIC OBJECTIVES

After completion of this unit, the cooperator should be able to:

1. Match terms associated with hedging to the correct definitions.
2. Select from a list advantages of futures markets as compared to cash contracts.
3. Distinguish between hedging and speculation.
4. State the questions relevant to any forward pricing hedge.
5. Arrange in order steps of the basic hedging procedure.
6. List reasons that might motivate a cooperator to forward price a commodity.
7. Match steps in estimating potential costs and returns to the correct descriptions.
8. Arrange in order the procedure for localizing futures prices.
9. Select from a list characteristics of basis.
10. List sources of basis.
11. State hedging guidelines.
12. Discuss completing a hedge.
13. Arrange in order steps in a livestock hedging tabulation.
14. List sources of wheat basis.
15. State steps in a crop hedging tabulation.
16. Complete the commodity futures specifications chart.
17. Discuss margin requirements.
18. Select from a list qualities to look for in a broker.
19. Distinguish between the do's and don'ts of hedging.

20. Calculate asking price.

21. Calculate localized futures price.

22. Determine historical basis.

23. Calculate net realized hedged price on a livestock futures hedge.

24. Calculate net realized hedged price on a grain futures hedge.

25. Determine the margin account for a live cattle contract.

26. Chart commodity futures prices.

HEDGING
UNIT VI

SUGGESTED ACTIVITIES

I. Suggested activities for the instructor:

A. Provide cooperator with objective sheet.

B. Provide cooperator with information and assignment sheets.

C. Discuss unit and specific objectives.

D. Discuss information and assignment sheets.

E. Work through hedging problems with cooperators.

F. If class time can be extended to two or more periods, obtain *Commodity Futures Workshop for Agricultural Producers* slide/tape presentation and workbook by Dr. John Ikerd, Oklahoma State University Extension economist. Materials may be obtained by contacting the O.S.U. Cooperative Extension Service, 513 Ag Hall, Oklahoma State University, Stillwater, Oklahoma, 74078. This is six hour workshop on forward pricing cattle.

G. Order for each cooperator a copy of the O.S.U. Extension Fact Sheets listed below. Fact sheets may be obtained from your county extension director or by contacting the O.S.U. Cooperative Extension Service, 513 Ag. Hall, Oklahoma State University, Stillwater, Oklahoma, 74078.

1. *#415 - Expected Returns from Hedged Storage of Wheat; 1970.*
2. *#430 - Basic Futures Trading and Livestock Hedging; 1978.*
3. *#432 - Hedging Fundamentals for Livestock Producers; 1978.*
4. *#432 - Basis: The Key To Successful Livestock Hedging; 1978.*
5. *#435 - Hedging Strategies for Livestock Producers; 1978.*
6. *#436 - Using Futures Markets for Hedging: Forward Pricing Cattle; 1978.*
7. *#3675 - Using Futures Markets for Hedging: Forward Pricing Hogs; 1978.*

H. Obtain a copy of *How to Make Livestock Futures Work for You* for each cooperator in the class. Copies may be obtained by writing to the Chicago Mercantile Exchange, 444 West Jackson Boulevard, Chicago, Illinois, 60606 or calling 312-648-1000.

I. Obtain the film *Your Profit In Futures.* The free loan film may be obtained from the O.S.U. Cooperative Extension Service, 513 Ag. Hall, Oklahoma State University, Stillwater, Oklahoma, 74048, or from Chicago Mercantile Exchange, 444 West Jackson Boulevard, Chicago, Illinois, 60606.

J. Have class members follow cash and futures markets for a commodity for three months and chart the results.

K. Chart major commodities on posters so that class members may watch commodity price movements each class period.

L. An additional reference the instructor may wish to use is the *Doane's Agriculture Report-Reference Volume.* May be ordered from Doane's Agricultural Service, Inc., 8900 Manchester Road, St. Louis, Missouri, 63144. Reports of interest for the hedging unit include:

1. *#51 - Using Livestock Futures Markets.*
2. *#71 - Using the Grain Futures Markets.*
3. *#73 - Chart Patterns Are Useful Hedging Guides.*
4. *#75 - Determining Local Basis for Storage Hedges.*
5. *#77 - Futures Market Terminology.*

M. Have a commodity broker familiar with agriculture and hedging speak to class.

N. Give test.

O. Critique test.

P. Reteach, if necessary.

II. Instructional materials:

A. Objective sheet

B. Information sheet

C. Assignment sheets

1. Assignment Sheet #1–Calculate Asking Price
2. Assignment Sheet #2--Calculate Localized Futures Price
3. Assignment Sheet #3--Determine Historical Basis
4. Assignment Sheet #4--Calculate Net Realized Hedged Price on a Livestock Futures Hedge
5. Assignment Sheet #5--Calculate Net Realized Hedged Price on a Grain Futures Hedge

    6. Assignment Sheet #6--Determine the Margin Account for a Live Cattle Contract

    7. Assignment Sheet #7--Chart Commodity Futures Prices

  D. Answers to assignment sheets

  E. Test

  F. Answers to test

III. Unit references:

  A. Ikerd, John E. *Pricing Alternatives for Livestock Producers.* Stillwater: Oklahoma State University, Oklahoma State University Extension Facts No. 434, 1978.

  B. Ikerd, John E. *Managing Livestock Risks Through Forward Pricing.* Stillwater: Oklahoma State University, Oklahoma State University Extension Facts No. 431, 1978.

  C. Ikerd, John E. *Basic Futures Trading and Livestock Hedging.* Stillwater: Oklahoma State University, Oklahoma State University Extension Facts No. 430, 1978.

  D. Ikerd, John E. *Hedging Fundamentals for Livestock Producers.* Stillwater: Oklahoma State University, Oklahoma State University Extension Facts No. 432, 1978.

  E. Ikerd, John E. *Basis: The Key to Successful Livestock Hedging.* Stillwater: Oklahoma State University, Oklahoma State University Extension Facts No. 433, 1978.

  F. Turnbull, Roderick. *Turnbull on Grain.* Danville, Illinois: The Interstate Printers and Publishers, Inc., 1978.

  G. *Commodity Trading Manual.* Chicago: Chicago Board of Trade/Education and Publishing Services, 1976.

  H. Franzmann, John F. *Class Notes for Agricultural Economics 4333, The Commodity Futures Markets.* Stillwater: Oklahoma State University, 1977, mimeographed.

  I. Hummer, Paul D. *Class Notes for Agricultural Economics 3303, Agricultural Marketing I.* Stillwater: Oklahoma State University, 1975, mimeographed.

  J. Teweles, Richard J., Harlow, Charles V., and Stone, Herbert. *The Commodity Futures Game: Who Wins? Who Loses? Why?* New York, New York: McGraw-Hill Book Co., 1974.

  K. Ikerd, John E. *Hedging Strategies for Livestock Producers.* Stillwater: Oklahoma State University, Oklahoma State University Extension Facts No. 435, 1978.

  L. Bucher, Robert F., and Cramer, Gail F. *Beef Cattle Futures: A Marketing Management Tool.* Bozeman: Montana Agricultural Experiment Station/Facts No. 663, 1978.

M. Ikerd, John E. *Using Futures Markets for Hedging: Forward Pricing Hogs.* Stillwater: Oklahoma State University, Oklahoma State University Extension Facts No. 3675, 1978.

N. Farmer, Charles M. *Forward Pricing Grain and Soybeans with a Futures Market Hedge. Leaflet 4,* Knoxville, Tennessee: Agricultural Extension Service/University of Tennessee, Publication 765, 1978.

O. Farmer, Charles M. *How Producers Can Use The Futures Market--Some Examples. Leaflet 5,* Knoxville, Tennessee: Agricultural Extension Service/ University of Tennessee, Publication 766, 1978.

P. Nichols, Everett, Jr. *Hedging Soybeans in the Futures Market.* Starksville, Mississippi: Cooperative Extension Service/Mississippi State University, No. 1089, 1978.

Q. Lutgen, Lynn. *Cornhusker Economics: Futures Prices Provide Useful Information.* Lincoln, Nebraska: Cooperative Extension Service/University of Nebraska, May 23, 1979.

R. Purcell, Wayne D. *Agricultural Marketing Systems Coordinations, Cash and Futures Prices.* Reston, Virginia: Prentice-Hall Publishing Co., 1979.

S. Mennen, Gary M., and Purcell, Wayne D. *Hedging of Fed Beef Cattle.* Stillwater: Oklahoma State University, Oklahoma State University Extension Facts No. 420, 1975.

T. Page, R. E. *Forward Pricing of Wheat.* Stillwater: Oklahoma State University, Oklahoma State University Extension Facts No. 428, 1976.

U. Mennen, Gary M., and Oehrtman, Robert L. *Costs of Holding Wheat.* Stillwater: Oklahoma State University, Oklahoma State University Extension Facts No. 428, 1976.

V. Tomek, William G., and Robinson, Kenneth L. *Agricultural Product Prices.* Ithaca, New York: Cornell University Press, 1975.

IV. Additional references:

A. Grains

1. Chicago Board of Trade
LaSalle at Jackson
Chicago, Illinois 60604

2. Kansas City Board of Trade
4800 Main Street
Kansas City, MO 64112

3. Pacific Commodities Exchange, Inc.
315 Montgomery Street
San Francisco, CA 94104

4. Minneapolis Grain Exchange
150 Grain Exchange Building
Minneapolis, NM 55415

B. Meats–Chicago Mercantile Exchange
444 W. Jackson Boulevard
Chicago, Illinois 60604

C. Grains and meats–Midamerica Commodity Exchange
175 W. Jackson Boulevard
Chicago, Illinois 60604

D. Cotton–New York Cotton Exchange
#4 World Trade Center, 8th Floor
New York, New York 10048

V. Additional government references:

(NOTE: The following government publications are available from the federal government and can be obtained by writing to:

Agriculture Marketing Services
Division of Information
Office of Management Services
U.S. Department of Agriculture
Washington, DC 20250

A. Wheat

1. *The USDA Crop Production Report*
2. *Wheat Situation Report*
3. *Grain Market News*
4. *Commitments of Traders in Commodity Futures*

B. Corn

1. *Grain Trade Statistical Annual*
2. *Feed Situation Report*
3. *Grain Market News*

C. Soybeans

1. *Fats and Oils Situation Report*
2. *Feed Situation Report*

D. Cotton

1. *USDA Cotton Production Reports*
2. *Cotton Situation Report*

E. Grain Sorghum--*Grain Market News*

F. Cattle
  1. *Cattle and Calves Report*
  2. *Meat Animals Report*
  3. *Shipments of Stockers and Feeder Cattle and Sheep*
  4. *Cattle on Pasture*

G. Hogs and pork bellies
  1. *Livestock and Meat Situation Reports*
  2. *Feed Situation Reports*
  3. *Hogs and Pigs Report*
  4. *Monthly Cold Storage Reports*
  5. *Livestock, Meat, and Wool Markets*

H. Broiler and eggs
  1. *Eggs, Chickens, and Turkeys*
  2. *The Poultry Slaughter and Processing Report*
  3. *The Hatchery Production Report*
  4. *Pullet Chicks for Broiler Hatchery Supply Flocks*
  5. *Poultry and Egg Situation Report*

VI. Additional references available in Oklahoma:

(NOTE: Publications A through F can be obtained from:

Department of Agricultural Economics
Agriculture Hall
Oklahoma State University
Stillwater, Oklahoma 74078.)

A. *Oklahoma Cooperative Extension Service Agricultural Policy and Economics Issues*

B. *Oklahoma State University Extension Facts*

C. *Oklahoma State University Current Reports*

D. *Oklahoma State University Agricultural Experiment Station Technical Bulletins*

E. *Hedging Hints for Livestock Producers* (newsletter)

F. *Market Viewpoints* (newsletter)

(NOTE: The publication listed below [G] is available from:

State Department of Agriculture
122 State Capitol
Oklahoma City, Oklahoma 73105
Attn: Gary M. Bledsoe, Market News Reporter.)

G. *Oklahoma Market Report*

HEDGING
UNIT VI

INFORMATION SHEET

I. Terms and definitions

A. Hedging--Initiation of a position in a futures market that is intended as a temporary substitute for the sale or purchase of the actual commodity

(NOTE: *Hedging* also may be defined as "making an equal and opposite transaction between the cash and futures market to protect a specified price for some future date." Sale of futures contracts in anticipation of futures sales is used as protection against possible price declines; purchase of futures contracts in anticipation of upcoming purchases of cash commodities is used as protection against possible price increases.)

B. Buy contract–Buyer incurs a binding commitment to accept delivery of the product as described in the contract on the dates specified in the contract, unless the buyer takes an equal and offsetting action prior to the contract's maturity date

C. Sell contract–Seller incurs a binding commitment to deliver the product as described in the contract on the dates specified in the contract, unless the seller takes an equal and offsetting action prior to the contract's maturity date

D. Basis--Difference between a cash price at a specific location and the price of a particular futures contract; may refer to a specific futures contract or marketing location

E. Localized futures price--Futures price adjusted for basis and hedging costs

(NOTE: Future price is offered at a designated market.)

F. Asking price--Total of variable costs, fixed costs, management costs, and profit objectives

(NOTE: Asking price is useful because it sets a pricing objective used in the hedging decision.)

G. Basis "narrowing"--Situation where cash prices are gaining on nearby futures

(NOTE: A "strong basis" is one where cash values at a specified location are above the futures or under them and can only be a narrower than average degree. This usually indicates strong cash demand at the basis location.)

INFORMATION SHEET

H. Basis "widening"--Situation where cash prices are losing on nearby futures

(NOTE: A "weak basis" is one where cash values at the basis location are under the futures by a wider than normal degree. This can indicate weak demand for the physical product.)

I. Bearish–Term used to describe forces likely to put the market down

J. Bullish--Term pertaining to fundamental or technical forces likely to move the market up

K. Fundamental side of the market–That having to do with the physical supply-demand side of the market

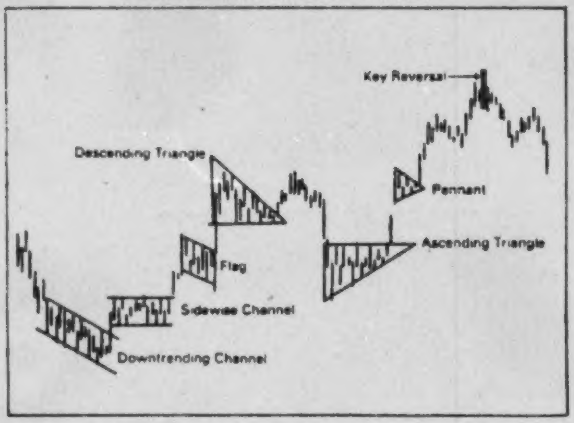
Examples: Size of production; weather; consumption levels; yields

L. Technical side of the market--That side which helps measure trader reaction to fundamentals

(NOTE: This is the *people* or *psychological* aspect of the market. Technical tools include price chart information, volume, and open interest. Technical traders use chart reactions as a guide to trading current markets.)

M. Chart pattern–Any of a number of technical formations used by traders to forecast the direction and momentum of the market based on the historical gyrations of the contract

Example:



TYPICAL PRICE CHART PATTERNS

INFORMATION SHEET

N. Volume--Total trades made in a market over a given period, usually expressed as the number of contracts traded in daily terms

O. Open interest--Number of outstanding positions in a market at any given time

P. Commission--Fee a brokerage firm charges a customer for filling a speculative or hedging transaction in the futures market

(NOTE: A ballpark figure for round-turn commission charge for wheat would be $50 per 5,000 bushel contract traded.)

Q. Round turn--Combination of an initiating purchase or sale of a futures contract and offsetting sale or purchase of an equal number of futures contracts of the same delivery month

(NOTE: *Round turn* also may be known as "covering one's position.")

R. Go long the market--To buy a futures contract

(NOTE: Those who have bought the market are collectively called *longs*.)

S. Long liquidation--Longs leave the market by selling out an existing position

(NOTE: A price drop after a bearish fundamental or technical development often will be attributed to "long" liquidation.)

T. Go short the market--To sell a futures contract

(NOTE: Those who have sold the market are collectively called *shorts*.)

U. Short covering--Shorts leave the market by buying back previously sold positions

(NOTE: Price rises after fundamental or technical developments adverse to a sold position often are attributed "short covering.")

V. Stop order--Standing market order to put a speculator or hedger out of an existing market position if a predetermined price level is touched

(NOTE: Stop order may be activated either because profit goal has been achieved or because price movement beyond the "stop" level would indicate the need to step aside and reevaluate the existing market position; the latter termed a "fail safe stop".)

W. Margin deposit--Earnest money deposited with a brokerage firm when a position is taken in the market

(NOTE: Margins generally run about 10% of contract value and must be maintained at a specified minimum level while the trade or hedge exists.)

INFORMATION SHEET

X. Margin call--Call for additional margin when funds in a trading account fall below levels required by the brokerage firm

(NOTE: Margin minimums are set by exchanges. A brokerage firm can set its margin minimums above that minimum.)

Y. Notice of intention to deliver–Notice that must be presented by the seller to the clearinghouse where the notices and the subsequent delivery instruments are assigned to the longest standing buyer on record

(NOTE: As previously stated, hedging is a substitute for the sale or purchase of a commodity. It is not necessary to deliver or accept delivery of futures if the contract is liquidated prior to maturity; that is, before the the last month of contract period.)

Z. Contract grades--Standards of grades of commodities listed in the rules of exchange that must be met when delivering cash commodities against futures contracts

AA. Commodity Futures Trading Commission (CFTC)--Federal regulatory agency charged and empowered under the Commodity Futures Trading Commission Act of 1974 with regulatory powers over futures trading in all commodities

BB. "Roll over" a hedge--Moving a hedge position from a nearby futures contract to a more distant one

(NOTE: Either because the current contract is about to expire or the more distant future offers better profit potential.)

CC. Crop year–Twelve-month period between the beginning of harvest of one crop and that of the succeeding crop

Example: Crop year table

Wheat, oats	June 1 through May 31
Cotton	August 1 through July 31
Soybeans	September 1 through August 31
Corn	October 1 through September 30

DD. Old crop--The most recent crop harvested

Example: On January 1, 1981, old crop corn is corn harvested the previous fall. On thata date, the old crop would be expired December, 1980, and March, May, July, and September 1981 contracts

EE. New crop--The crop to be harvested for the coming crop year

Example: On January 1, 1981, new crop is corn to be planted in the spring and represented by the December 1981, and March, May, July, and September 1982 futures contracts

INFORMATION SHEET

FF. Expiration of a contract--Final trading day in a futures contract

(NOTE: In grains, contracts expire around the third week of the delivery month. Grain contracts exist about 18 months.)

II. Advantages of futures markets as compared to cash contracts

A. Insures a competitive market because prices are determined in a highly active market with a large volume of trading

(NOTE: Cash contract prices are a one-to-one negotiation.)

B. Provides maximum pricing flexibility in contracts which may be bought or sold at any time

(NOTE: Cash contracts are not always available or so easily voided.)

C. May offer slightly higher prices for the same quality product

III. Hedging and speculation

A. Hedging--Allows cooperators to establish a position in the market with crops or livestock to reduce price risk associated with producing these commodities

(NOTE: A seller-hedger always has control of the actual commodity being traded. A buyer-hedger does not have control of the commodity, but is prepared to accept delivery of the commodity.)

B. Speculation--Allows an individual to take a position in the futures market, but not have possession of the commodity being traded, or does not control enough of the actual commodity to cover those positions in the market

(NOTE: Speculators try to anticipate what prices are going to do and make a profit, if correct. Many argue that speculators serve no purpose other than to cause wide fluctuations in prices. This is not true. Speculators provide liquidity in the market; that is, they provide the volume which allows the hedger to quickly enter and depart from the market. Speculation is said, by some, to be gambling; however, gambling serves no useful purpose other than to satisfy the gambler. Speculation deals with the risks necessarily present in the marketing process. Unlike the gambler who causes a game merely to satisfy the desire to gamble, the speculator does not inject risk into the economy because of a willingness to speculate.)

IV. Questions relevant to any forward pricing hedge

(NOTE: These questions are basic to any cooperator who uses the futures market to forward price a commodity rather than speculate on a price change. A forward pricing hedge can be a cooperator who owns a commodity and takes an offsetting position in the futures market. The cooperator would hold his/her position until the commodity was sold and then offset the sale in the futures markets. The cooperator maintains a commitment at all times in both the cash and futures markets. There is no multiple hedging strategy.)

INFORMATION SHEET

A. What price is the futures market offering for my commodity?

B. How much potential profit does that price represent?

V. Steps of the basic hedging procedure

A. Determine the hedging objective

B. Estimate potential costs and returns

C. Localize the futures price

D. Make the hedging decision

E. Complete the hedge

VI. Reasons that might motivate a cooperator to forward price a commodity

(NOTE: Hedging objectives of different cooperators may be different. Objectives of a given cooperator may be different at different points in time. Without a clear cut objective, cooperators have no sound basis for their hedging decisions and neither are they able to accurately evaluate their hedging results. Hedgers must know what they are trying to do if they are to know how to do it and whether or not it has been done.)

A. Higher prices

(NOTE: Cooperators may feel that the current futures market price reflects a price higher than cash market prices will be when their commodity is ready for delivery. Cooperators hedging with a main objective of higher prices will not hedge unless the price offered by the futures market exceeds the price expected for the commodity on the cash market at delivery time.)

B. More certain prices

(NOTE: Cooperators may be unwilling or unable to accept the risk of prices lower than those indicated by the current futures price even if they think cash prices may be higher at time of delivery. Basis is easier to predict than futures market prices, thus, there is a greater chance of success when the hedger is trying to reduce price risk instead of concentrating on higher prices.)

VII. Steps in estimating potential costs and returns (Assignment Sheet #1)

A. Production costs-Expenses associated with producing a commodity

(NOTE: Potential profitability of the hedged commodity depends on the relationship between expected costs of production and the expected hedged price. Production costs can not be precisely predicted in advance because there are production risks related to the physical efficiency of the production process.)

INFORMATION SHEET

B. Variable costs--Costs that will be higher at higher levels of production and may be avoided completely if nothing is produced

Examples:	Feed; feeder animals; transportation; marketing; seed; fuel; hired labor

(NOTE: Cooperator should never hedge at a localized futures price that will not cover variable costs.)

C. Fixed costs--Costs that are the same regardless of the level of production and are unavoidable even if nothing is produced

Examples:	Depreciation on buildings and equipment; land investment; taxes; insurance; family or salaried labor

(NOTE: Cooperator would produce at any price above variable cost, rather than not produce at all, even if total costs are not covered. Fixed costs have to be paid, regardless. It is better to have something going toward paying these costs than nothing. Hedging may be used to minimize losses in cases where the localized futures price is above variable costs but below total costs.)

D. Management costs--What the producer expects to allocate to one's own management input

(NOTE: Operator's labor plus management costs is typically related to what the cooperator could earn as a salary working for someone else or at least a salary to keep the cooperator in farming.)

E. Profit objective--Return for taking the risks associated with producing a particular commodity

(NOTE: Development of a profit objective does not guarantee that it will be achieved, but it does provide a benchmark which may be useful in decision making.)

VIII. Procedure for localizing futures prices (Assignment Sheet #2)

A. Select the appropriate contract month to use for hedge

(NOTE: The appropriate contract is the one that matures nearest to, but not before, the date the cooperator expects to complete the hedge.)

B. Calculate the basis

(NOTE: Basis comparing the cash price of the commodity delivered to the local market with the futures prices for the contract used to hedge is the most important basis to the cooperator.)

INFORMATION SHEET

C. Determine hedging costs

(NOTE: Hedging costs include brokerage fees and interest on margin money.)

D. Calculate localized futures price by adjusting futures price for basis and hedging costs

(NOTE: Localized futures price is the cooperator's best estimate of the price the futures market is offering for the commodity delivered to the local market.)

IX. Characteristics of basis (Assignment Sheet #3)

A. Refers to any cash market price compared to any futures market price

B. Is calculated as the difference between cash market price and futures market price

(NOTE: The mathematical formula for basis is:

CASH MARKET PRICE - FUTURES MARKET PRICE = BASIS.)

Example: Difference between Oklahoma City cash market price for slaughter hogs in April and the Chicago Mercantile Exchange live hogs futures market price for April delivery quoted in April as a basis. If hogs are selling for $48.80 in Oklahoma City and prices are $49.00 on the Chicago Mercantile Exchange, the futures basis for live hogs is -$0.20

C. May refer to different delivery items

Example: Cash price in March compared to April futures prices

D. May be different for differences in marketing locations and methods

Examples: Basis may be different for live hogs in Fort Worth, Texas, than in Birmingham, Alabama

E. Refers to specific qualities of products at a specific market location at specified delivery dates for cash and futures markets

X. Sources of basis (Assignment Sheet #3)

(NOTE: Basis estimates should be obtained before hedging; basis fluctuations rather than commodity prices will determine the results of a hedge. It should be pointed out that basis may be predicted with much more accuracy than future prices.)

INFORMATION SHEET

A. Historical price relationships between futures prices and local cash market prices

(NOTE: This is the method used most frequently in hedging.)

Example:

FEEDER STEER BASIS ESTIMATES

Delivery[1]	Futures[2]	Average[3]	90%-any day[4]	95%-1 of 5 days[5]
Feeder Steers/Oklahoma City Choice 600-700 lbs.				
Jan	Mar	−1.95	−4.65	−1.75
Feb	Mar	−1.95	−4.65	−1.75
Mar	Mar	−1.45	−3.15	−1.35
Apr	Apr	−1.45	−3.15	−1.35
May	May	−1.45	−3.15	−1.35
Jun	Aug	−1.95	−4.65	−1.75
Jul	Aug	−1.95	−4.65	−1.75
Aug	Aug	−0.65	−2.35	−0.55
Sep	Sep	−0.65	−2.35	−0.55
Oct	Oct	−0.65	−2.35	−0.55
Nov	Nov	−0.65	−2.35	−0.55
Dec	Mar	−1.95	−4.65	−1.75

1. Month hedge is to be completed and livestock delivered. Includes last week of previous month.
2. Futures contract used for hedge.
3. Average basis for data period. 50-50 chance that the basis for any given day will be larger or smaller than table value.
4. 90% probability that basis for any given day will be at least as favorable as table value.
5. 95% probability that at least one basis during a 5 day period will be at least as favorable as the table value.

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(NOTE: This is based on weekly prices available from January 1972 thru July, 1977.)

B. Delivery costs

Examples: Applicable discounts; insurance; shrinkage; interest charges; commissions; grading fees; transportation costs

(NOTE: This method assumes the hedger has the potential to make delivery; however, this method will generally result in a larger basis for the producer than the historical price concept.)

INFORMATION SHEET

XI. Hedging guidelines

(NOTE: Although blanket recommendations can't be made, there are guidelines with respect to hedging returns and objectives which may be helpful to cooperators in making their individual decisions.)

A. Become familiar with futures markets before attempting to hedge

B. Try a few hedges "on paper" before actually taking a position in the market

C. Set goals and objectives before hedging

D. Be prepared to meet margin calls

E. Find a banker who understands hedging

F. Find a broker who understands hedging

G. Cooperator would never hedge at a forward price less than the expected variable costs

H. Cooperator is more likely to hedge if the localized futures price is above the asking price

I. Cooperator with an objective of a higher price will not likely hedge at any price below the asking price

(NOTE: Asking price will reflect cooperator's price expectations.)

J. Cooperator with an objective of a more certain price might be willing to hedge at a localized futures price less than the asking price

(NOTE: This depends on cooperator's willingness or ability to accept the risk of an even lower price if hedge is not made.)

XII. Completing a hedge

A. Should be completed by offsetting futures contract and buying/selling the commodity as near the same time as possible

B. After hedge is completed, it should be evaluated in terms of the objective

XIII. Steps in a livestock hedging tabulation (Assignment Sheet #4)

(NOTE: Most livestock do not meet futures specifications and, thus, are not deliverable; therefore, most hedgers never actually deliver the commodity.)

A. Analyze financial position and determine objectives

(NOTE: A producer with large amounts of equity capital and little or no debt may have no incentive to hedge because of unused risk bearing capacity. A cooperator whose cash flow is tight and has a large amount of debt capital may wish to hedge to avoid any additional risk exposure.)

INFORMATION SHEET

B. Estimate potential costs and returns

(NOTE: Determine asking price.)

C. Localize futures prices

D. Make hedging decision

E. Complete the hedging decision

Examples:

1. Assuming a cooperator expects the basis for slaughter cattle to be -$1.45 from the April futures price of $75.00. An expected hedged price of $73.55 is obtained ($75.00 - $1.45). This is above the asking price of $65.00. The hedge is initiated by selling April futures in November at $75.00. In April, the cooperator completes the hedge by buying back April futures and selling the cattle on the local market

DATE	CASH MARKET	FUTURES MARKET	BASIS
Nov. 1	Expected hedged price @ $73.55	Sell April futures @ $75.00	Expected –$1.45
April 1	Sell cattle locally @ $83.70	Buy April futures @ $85.00	Realized –$1.30
Difference	+$10.15	-$10.00	+$0.15

PRICING RESULTS

Local price for cattle	$83.70
Futures loss	–$10.00
Net realized hedge price	$73.70

The cooperator priced the cattle at $73.55. This was not realized because of some fluctuation in basis. Of course, the cooperator could have made more by not hedging at all; but because most individuals cannot predict future prices accurately, the decision to hedge may have been a wise one. Even though the cooperator got a lower price, the price was very near the price at which the cooperator was willing to sell when the hedge was placed.

INFORMATION SHEET

2. Again assume a basis of –$1.45. Initial prices are the same, however, prices are lower in April. If prices were lower rather than higher, it would have looked like this:

DATE	CASH MARKET	FUTURES MARKET	BASIS
Nov. 1	Expected hedged price $73.55	Sell April futures @ $75.00	Expected –$1.45
April 1	Sell cattle locally $67.00	Buy April futures @ $68.30	Realized –$1.30
DIFFERENCE	-$6.55	+6.70	+$0.15

PRICING RESULTS

Local price for cattle	$67.00
Futures gain	+$6.70
Net realized hedged price	$73.70

If the cooperator did not hedge in this instance, the amount realized would have been much less than expected. The future's transaction enabled the cooperator to remain very close to the hedging objective

XIV. Sources of wheat basis

(NOTE: Grain trading in Oklahoma centers around wheat, so our discussion of basis and hedging will center around wheat.)

A. Kansas City Board of Trade wheat futures prices

(NOTE: Kansas City futures are a method of reflecting free world price levels. Influential factors would include Hard Red Winter wheat being the major type of exported wheat and is traded at the Kansas City Board of Trade, and U.S. markets are generally the only free market still traded because other exporting countries fix their export prices.)

Example: Assume the basis bid of 10¢ under Kansas City futures. To determine local price from this quote, cooperators would have to know the Kansas City futures price for the month in question. Subtracting 10¢ from this price would give the local elevator bid; likewise if a basis bid was 10¢ above Kansas City futures for the month in question, adding 10¢ to the Kansas City price would give the local elevator bid

FUTURES PRICE - BASIS BID = LOCAL ELEVATOR BID

INFORMATION SHEET

B. Export prices from the Gulf of Mexico

(NOTE: Although Kansas City futures reflect free world market prices on Hard Red Winter wheat, Gulf bid basis may be more relevant for cooperators in the southwestern and southeastern United States, including Oklahoma.)

Examples: Assuming the cost of transporting wheat from the local elevator to the Gulf is 25¢ and a 5¢ charge is made for transferring costs (from elevator to boxcar and back again.) If the grain firm bids 30¢ a bushel (basis) over the local price for wheat delivered to the Gulf, this price is considered "even" with local prices;

If the Gulf bid is above or below the calculated delivery costs, the cooperator may assume that grain firms are offering a premium (bid above transportation costs) or discount (bid below transportation costs);

If wheat is needed badly for export, the bid will reflect a premium; if it is not needed for export, a discount will be indicated

XV. Steps in a crop hedging tabulation (Assignment Sheet #5)

A. Analyze financial position and determine objectives

B. Estimate potential costs and returns

C. Localize futures prices

D. Make hedging decision

E. Complete the hedging decision

Examples:

1. Assume a cooperator has calculated a basis of $0.50 exists between July Kansas City wheat and December cash prices. The cooperator wants to hedge part of the current crop. Five-thousand bushels are hedged in December on July futures. An asking price of $3.15 is assumed

DATE	CASH MARKET	FUTURES MARKET	BASIS
Dec. 1	Expected hedged price $3.50	Sell July futures $4.00	Expected $0.50
July 1	Sell wheat locally $3.80	Buy July futures $4.25	Realized $0.45
DIFFERENCE	+$0.30	-$0.25	+$0.05

INFORMATION SHEET

PRICING RESULTS

Local price for wheat	$3.80
Futures loss	-$0.25
Net realized hedged price	$3.55

2. In the previous instance, the cooperator was close to the pricing objective of $3.50 and actually went slightly over the figure. If the prices had been lower in July, the problem would have looked like this:

DATE	CASH MARKET	FUTURES MARKET	BASIS
Dec. 1	Expected hedged price $3.50	Sell July futures $4.00	Expected $0.50
July 1	Sell wheat locally $3.35	Sell July futures $3.80	Expected $0.45
DIFFERENCE	- $0.15	+$0.20	+$0.05

PRICING RESULTS

Local price for wheat	$3.35
Futures gain	+$0.20
Net realized hedged price	$3.55

(NOTE: Although our discussion has centered around wheat, as long as the basis bid is known, localized prices can be obtained for any grain or crop using techniques described.)

XVI. Commodity futures specifications chart

(See charts on the following pages.)

INFORMATION SHEET

COMMODITY FUTURES SPECIFICATIONS

Commodity	Where traded	Contract specifications	Delivery points
Wheat	Chicago Board of Trade; Kansas City Board of Trade; Minneapolis Grain Exchange; Midamerica Commodity Exchange (NOTE: Because the most important class of wheat traded in the U.S. is Hard Red Winter, our discussion will center around the Kansas City Board of Trade.)	5,000 bushels of No. 2 Dark Hard Winter wheat, Heavy Dark Hard Winter wheat, Hard Winter wheat, Yellow Hard Winter wheat (NOTE: Premiums or discounts may be in effect for deviations. Midamerica Commodity Exchange contract size is 1,000 bushels of wheat.)	Kansas City, Missouri; Kansas City, Kansas
Corn	Chicago Board of Trade; Midamerica Commodity Exchange	5,000 bushels of No. 2 Yellow corn	Chicago, Illinois; Toledo, Ohio; St. Louis, Missouri (NOTE: Deliveries at Toledo and St. Louis are made at a discount of 4¢ under contract.)
Soybeans	Chicago Board of Trade; Midamerica Commodity Exchange	5,000 bushels of No. 2 Yellow soybeans (NOTE: Midamerica Commodity Exchange contract size is 1,000 bushels.)	Chicago, Illinois warehouses
Soybean oil	Chicago Board of Trade	60,000 pounds of oil (one standard tank car)	Chicago, Illinois
Soybean meal	Chicago Board of Trade	100 tons of meal	Iowa; Illinois; Missouri; Indiana; Ohio; Kentucky; Tennessee; Arkansas; Alabama; Mississippi

INFORMATION SHEET

COMMODITY FUTURES SPECIFICATIONS

Commodity	Where traded	Contract specifications	Delivery points
Cotton	New York Cotton Exchange; Mid-America Commodity Exchange	100 bales or 50,000 pounds of No. 2 middling-grade 1-1/16 inch cotton (NOTE: Mid-America has a 50,000 pounds contract for 1-inch strict low middling cotton.)	New Orleans, Louisiana; Memphis, Tennessee; Greenville, South Carolina
Cattle	Chicago Mercantile Exchange	40,000 pounds of choice grade, according to USDA standards, slaughter cattle liveweight	Omaha, Nebraska; Sioux City, Iowa; Peoria, Illinois; Guymon, Oklahoma (NOTE: Premiums or discounts may be invoked at these points. Check with the commodity exchange for current premiums or discounts.)
Feeder cattle	Chicago Mercantile Exchange	44,000 pounds of choice and good grades as defined in the Official U.S. Standards for Grades of Feeder Cattle	Omaha, Nebraska; Sioux City, Iowa; Oklahoma City, Oklahoma
Live hogs	Chicago Mercantile Exchange	30,000 pounds of USDA Grades No. 1, 2, 3, and 4 barrows and gilts with allowances for deviatons	Chicago, Illinois
Frozen pork bellies	Chicago Mercantile Exchange	38,000 pounds of Green Square-Cut Seedless Bellies bearing USDA Meat Inspection Divisions inspection legend of Standard Grade established by the Exchange	Chicago, Illinois

INFORMATION SHEET

COMMODITY FUTURES SPECIFICATIONS

Commodity	Where traded	Contract specifications	Delivery points
Iced broilers	Chicago Board of Trade	30,000 pounds of USDA Grade A, whole Eviscerated broiler-fryer chickens with wrapped neck and giblets; iced, packed, and ready to cook in the 2.5 to 3.5 pound range in natural proportions	Arkansas; Mississippi; Alabama; Georgia
Eggs	Chicago Mercantile Exchange	22,500 dozen (one carload) of U.S. Extras 90% "A" quality or better with no case under 65% "A" quality large or wholesale grades	Chicago, Illinois

INFORMATION SHEET

XVII. Margin requirements (Assignment Sheet #6)

(NOTE: Margin requirements are the amount of money deposited by both buyer and seller of futures contracts to ensure performance of the terms of the contract. Margin is not a payment on the commodity itself, but rather a performance bond or security deposit.)

A. Margins are determined on the basis of probable risk or loss

1. Cooperator's margins must be maintained at specified minimum levels

2. If future's price movement is adverse to the cooperator's position, additional deposits will be required to bring the margin deposit back to the initial level

(NOTE: This usually will be a certain percentage of the value of the contract, usually 7 to 10%.)

B. Initial margin is the cooperator's primary deposit

C. Maintenance margin is the amount which must be present at all times in the account

D. Commission is the amount the broker earns for each round turn per contract

Example:

COMMODITY	INITIAL MARGIN/ CONTRACT	MAINTENANCE MARGIN/ CONTRACT	COMMISSION/ CONTRACT
Wheat	$1,000	$ 600	$45.50
Corn	600	400	45.50
Soybeans	2,250	1,500	43.50
Soybean oil	1,000	600	43.50
Soybean meal	1,200	750	43.50
Cotton	1,000	750	45.50
Cattle (Fat)	1,200	900	50.00
Cattle (Feeder)	1,200	900	50.00
Live hogs	1,000	700	45.00

INFORMATION SHEET

COMMODITY	INITIAL MARGIN/ CONTRACT	MAINTENANCE MARGIN/ CONTRACT	COMMISSION/ CONTRACT
Pork Bellies	1,500	1,000	55.00
Iced broilers	500	400	40.55
Eggs	700	500	50.00

(NOTE: Margins and commissions are subject to change without notice.)

XVIII. Qualities to look for in a broker

A. Knowledge about hedging and not just speculation

B. Exclusive handling of commodity markets to insure adequate time is spent in analysis of these markets

C. Knowledge about production agriculture

D. Should have best interests of the trader as the primary concern

(NOTE: A broker who repeatedly puts an individual in and out of the market with no sound reasoning behind these moves is usually doing nothing more than generating commission for personal gain.)

E. Should understand producer motivations

(NOTE: Unsupported decisions should be discounted and watched closely in the future.)

XIX. Do's and don'ts of hedging

A. Do's

1. Become thoroughly familiar with the futures markets and how to use them in hedging before attempting to hedge

   (NOTE: This unit is barely a start toward the information you need to hedge effectively.)

2. Determine your pricing objectives before hedging
3. Try a few hedges "on paper" to become familiar with hedging mechanics and to convince yourself that futures price changes will be offset by local market prices for the commodity
4. Know your production costs
5. Hedge only a small portion of your anticipated production, if possible, until you are convinced that forward pricing can do what you want it to do for you

INFORMATION SHEET

6. Be prepared to meet all calls for additional margin money

   (NOTE: If you cannot meet all calls for additional margin money, you cannot be assured of completing the hedge.)

7. Hedge by selling futures contracts that mature nearest to, but not before, you expect to deliver your commodity

8. Forward price feed cost when you forward price your livestock to reduce risk of rising production costs

9. Buy futures to offset your previous sale at the same time you establish a price for your commodity at the local market

   (NOTE: A delay of even one day or possibly even an hour can make a difference in the hedging outcome.)

10. Remember that a cooperator who does not forward price is, in a sense, a speculator

    (NOTE: The cooperator commits cost to production and speculates that price will be high enough to cover those costs.)

11. Select a commodity broker who understands hedging and knows your farming objectives

12. Find a lender who understands hedging to finance production and hedging activities

B. Don'ts

1. Make futures market transactions until you understand what you are doing

2. Confuse hedging with futures market speculation

   (NOTE: Speculators are concerned only with profits or losses in the futures market. A speculator has no commodity to sell to offset futures market profits or losses.)

3. Change pricing objectives in the middle of a hedge

   (NOTE: Lifting a hedge before the commodity is sold will leave the cooperator without price protection.)

4. Sell futures in amounts greater than the volume you are confident you can produce

   (NOTE: To do so means you are speculating on the difference. It usually is wise to hedge no more than 50-70 percent of expected production.)

INFORMATION SHEET

5. Fail to offset futures commitments when you sell your commodity

   (NOTE: Holding on to a futures position after the commodity is sold makes you a speculator.)

6. Try to outguess the market

   (NOTE: Once you have hedged, it makes no difference which way prices move as long as futures prices and local prices are offsetting.)

7. Hedge unless you know your local basis pattern

8. Hedge unless you have or have made arrangments to get enough margin money to complete the hedge

   (NOTE: Inability to meet a margin call might force you to lift your hedge at the worst possible time. A $10/cwt. change in futures prices represents $4,000/contract on a 40,000 lb. contract.)

9. View the futures market as a cash outlet for your commodity

   (NOTE: It is rarely feasible to deliver on a futures contract.)

10. Let you broker make decisions for you

    (NOTE: The broker does not share your profits and losses. Don't let a broker talk you into speculation when you want to hedge.)

11. Let a price that is perfectly acceptable slip away while you are waiting for futures prices possibly to go a few cents higher

    (NOTE: Hedging is simply a method of forward pricing. It should be evaluated as such. Hedging does not guarantee a higher price or even a profit; it is simply a tool to help cooperators manage risk. Effective risk management in total is the key to greater profits.)

HEDGING
UNIT VI

ASSIGNMENT SHEET #1–CALCULATE ASKING PRICE

NAME ____________________ SCORE ____________

The total of variable cost, fixed costs, management costs and profit objective may be called *an asking price.* Asking price is a useful concept in that it sets a pricing objective which may be used in making the hedging decision. It is calculated as a per unit price needed to cover all production costs, a return to management, plus a reasonable profit.

Example: For 1,000-pound fed cattle, prices needed to break even

	Per Head	Per Cwt.	Breakeven Price
Variable costs	$600.00	$60.00	$60.00
(600# feeder cattle @ $70.00/cwt plus $.45 per lb. of gain)			
Fixed costs	$ 20.00	$ 2.00	$62.00
Management costs.	$ 20.00	$ 2.00	$64.00
Profit objective.	$ 10.00	$ 1.00	$65.00
Asking price.	$650.00	$65.00	

The cooperator's asking price of $65.00 per cwt. would cover all expected costs including a return to management and a $10.00 per head profit. This does not mean that the cooperator would always hedge at a price of $65.00 or above, but it is an important objective. Cooperator would not hedge for any price below $60.00 because this would not cover variable costs. Any price above $60.00 would cover variable costs and part of the other costs.

Using the information given below, calculate the asking price for a group of choice slaughter steers. Write your answers in the chart on the next page.

Steers will be fed in the cooperator's feedlot for 200 days. They will be purchased as 500 lb. stocker steers and sold as 1,000 lb. choice slaughter steers. Assume a rate of gain of 2.5 pounds per day and a 2% death loss. The cooperator estimates the following expenses:

500 lb. stocker steers @$87.50/cwt
Vet medicine @$4.50/head
3,342 lbs. of mixed feed @$100.00/ton
Hauling 600 miles @$.02/mile
Sales commission @$1.25/head
14% interest on annual operating capital = $35.00/head
Depreciation on feed lot @$10.00/head
Taxes and insurance for feedlot @$.80/head
Cooperator's labor (opportunity cost) @$20.00/head
The cooperator would like to make a profit of $10.00 per head

ASSIGNMENT SHEET #1

	Per Head	Per Cwt.	Breakeven Price
Variable costs.	$______	$______	$______
+ Fixed costs	$______	$______	$______
+ Management costs.	$______	$______	$______
+ Profit objective.	$______	$______	$______
Asking price	$______	$______	

HEDGING
UNIT VI

ASSIGNMENT SHEET #2--CALCULATE LOCALIZED FUTURES PRICE

NAME ______________________________ SCORE ______________

Quoted futures price is for a specific quality of a commodity delivered to a specific market location at a specified time in the future. The hedger must adjust the quoted futures price for differences between the commodity being produced and those represented by the futures contract being used.

Use the information below to calculate the localized futures price. Write your answer in the space provided.

On January 5, the CME futures price for live cattle February delivery was $67.92. A cooperator has observed a stable predictable difference between the price received for cattle and the February delivery price of -$1.50 per cwt. The cooperator through past experiences has estimated the brokerage fees will be $0.15/cwt and the interest on margin money of $0.05/cwt.

Quoted futures price . . . . $ ______________ /cwt

Basis adjustment . . . . $ ______________ /cwt

Hedging costs . . . . $ ______________ /cwt

Localized futures price . . . . $ ______________ /cwt

(NOTE: This is the price being offered to the cooperator for cattle at the local market on January 5 for cattle to be delivered in February.)

HEDGING
UNIT VI

ASSIGNMENT SHEET #3--DETERMINE HISTORICAL BASIS

NAME ______________________________ SCORE ______________

Basis is probably the most important concept in hedging. Basis is defined as "the difference between a cash market price and a futures market price." A basis may refer to any cash market price compared to any futures market price.

Basis estimates are essential in making the initial decision to hedge or not to hedge. Once the hedge has been placed, it is the basis rather than price levels which determines the net result of the hedge. True hedging is nothing more than forward pricing. The accuracy with which the relevant basis can be estimated determines the accuracy with which hedging can be used to establish a price for a commodity before it is available for delivery.

The historical price method of estimating basis is the most widely applicable method of basis calculation. By using this method, the hedger compares past local market prices with past futures prices to determine the average size and variability of the difference. The hedger should be sure that the cash and futures prices they use are applicable in estimating the basis they expect to exist when they complete the hedge.

Using the information on the following page, determine the difference between the Guymon, Oklahoma, cash market price for choice slaughter steers in January and the Chicago Merchantile Exchange (CME) live cattle futures prices for February delivery quoted in January.

(NOTE: Basis = Cash Market Price minus Futures Market Price.)

Example: If choice steers are selling at Guymon for $67.25 and if the price quotation is $67.92 at CME, the futures basis for choice steers is –67 cents.

ASSIGNMENT SHEET #3

DATE	GUYMON CASH MARKET PRICE FOR SLAUGHTER STEERS; JANUARY 1981	CME FUTURES PRICE FOR LIVE CATTLE FEBRUARY DELIVERY; JANUARY 1981 (Closing price)	DIFFERENCE OR BASIS
1	HOLIDAY	HOLIDAY	
2	$67.25	$67.92	
5	67.25	67.92	
6	67.25	68.02	
7	67.25	67.32	
8	67.25	66.55	
9	67.25	66.15	
12	67.25	66.45	
13	67.25	66.67	
14	67.37	66.02	
15	66.75	66.50	
16	66.75	66.12	
19	66.25	65.70	
20	65.50	64.92	
21	65.75	64.77	
22	65.75	64.30	
23	65.25	64.30	
26	64.25	62.60	
27	64.50	62.10	
28	64.50	62.40	
29	63.00	61.75	
30	62.75	62.40	

HEDGING
UNIT VI

ASSIGNMENT SHEET #4--CALCULATE NET REALIZED HEDGED PRICE ON A LIVESTOCK FUTURES HEDGE

NAME ______________________________ SCORE ______________

A cooperator in north central Oklahoma wants to hedge some hogs. After determining goals and objectives, the cooperator decides hedging would be a wise move and the following figures are obtained. Basis is expected to be -$1.90 on hogs deliverable in June. June futures are currently trading at $51.25. Asking price is $49.00. The hedge is initiated by selling June futures at $51.25. In June, the cooperator completes the hedge by buying back June futures and selling hogs on the cash market. The futures were bought back at $53.00 and basis was -$1.75.

Calculate localized price for hogs, futures gain or loss, and net realized hedged price. Circle the correct buy/sell decision.

CASH MARKET		**FUTURES MARKET**		**BASIS**	
Expected hedged price	$______	Buy/sell June futures	$________	Expected	$________
Buy/sell hogs on cash market	$______	Buy/sell June futures	$________	Realized	$________
Difference	$______		$________		$________

PRICING RESULTS

Local price for hogs $______________

Futures profit or loss $______________

Net realized hedged price $______________

HEDGING
UNIT VI

ASSIGNMENT SHEET #5–CALCULATE NET REALIZED HEDGED PRICE ON A GRAIN FUTURES HEDGE

NAME ______________________________ SCORE __________

A grain sorghum producer in northwestern Oklahoma decides to hedge the crop this year. An asking price of $3.15 is determined. The producer decides to hedge at $3.50 per cwt. Basis is -$0.25. As the maturity date of the contract draws near, the cooperator sells the crop on the cash market and buys back the futures contract. The futures contract is bought back at $3.73 and basis is –$0.30.

Calculate local price for grain sorghum on the date of sale, futures gain or loss and net amount realized on the hedge. Circle the correct buy/sell decision.

CASH MARKET		**FUTURE MARKET**		**BASIS**	
Expected hedged price	$______	Buy/sell futures	$______	Expected	$______
Buy/sell grain sorghum locally	$______	Buy/sell futures	$______	Realized	$______
Difference	$______		$______		$______

PRICING RESULTS

Local price for grain sorghum $__________

Futures profit or loss $__________

Net realized hedged price $__________

HEDGING
UNIT VI

ASSIGNMENT SHEET #6--DETERMINE THE MARGIN ACCOUNT FOR A LIVE CATTLE CONTRACT

NAME______________________________________ SCORE ________________

Cooperators must open an account with the brokers they have chosen before beginning futures contracts trade. Cooperators will be asked to provide certain financial information similar to that required by a bank when making a loan. Cooperators also will be asked to sign a customer's agreement spelling out the legal responsibilities of each cooperator to fulfill obligations made by the broker under terms of the agreement.

Once an account has been opened with a broker, the cooperator may give the broker the first buy or sell orders. Once the hedge has been placed by selling a futures contract, whether the futures market moves up or down makes little difference in the final outcome. If the futures market drops, the cooperator's futures profits will be needed to offset the lower price received for livestock at time of delivery. If the futures market rises, futures losses will eventually be offset by higher livestock prices at time of delivery. With a falling futures market, the cooperator has to cover futures losses as they accrue in the market even though the commodity may not be available for sale for several months.

Futures traders must make initial margins deposits with their borkers when they sell or buy futures contracts. Brokers will make additional "margin calls" if the trader's account drops below some specific maintenance margin level. If the cooperator is unable to meet a margin call, he or she may be forced to lift a hedge at the worst possible time. The cooperators must be prepared to meet all margin calls if they are to be assured of being able to complete the hedge as initially planned.

Using the information on the next page, complete the margining of the traders account. Use the attached worksheet to record your answers. Brokers will typically margin each of their accounts each day based on the settlement prices for each contract. For the purposes of this assignment sheet you will be instructed to calculate margin requirements, on a less frequent basis.

ASSIGNMENT SHEET #6

Live Beef Cattle, August 1979 Contract, 40,000 lbs.

Initial margin requirement $1,250; maintenance level $1,000.

(NOTE: All prices rounded to nearest $0.10 for ease in computation.)

Sold on April 2 at $70.00 to place the hedge.

Date	Price
Apr. 4	$70.50
Apr. 6	$71.50
Apr. 9	$73.00
Apr. 19	$74.90
Apr. 30	$76.50
May 9	$72.20
May 22	$72.40
June 1	$68.20
June 14	$66.90
June 25	$65.60
July 5	$68.60
July 16	$68.80
July 26	$64.20
Aug. 1	$59.00

Completed hedge by buying contract on August 6 at $57.40.

Example: Commodity Live Beef Cattle
Contract Month August Contract Size 40,000 lbs.
Initial Margin Requirement $1,250.00 Maintenance Margin Level $1,000.00
(record as initial currect balance)

Date	Price	Price Change	Profit or loss	Margin Call	With-drawal	Current Balance	Net Sum Calls & Draws
April 2	$70^{\underline{00}}$	XXX	XXX	XXX	XXX	$1250^{\underline{00}}$	XXXXX
4	$70^{\underline{50}}$	+ $\underline{50}$	⟨$200^{\underline{00}}$⟩			$1050^{\underline{00}}$	
6	$71^{\underline{50}}$	+$1^{\underline{00}}$	⟨$400^{\underline{00}}$⟩	$600^{\underline{00}}$		$1250^{\underline{00}}$	⟨$600^{\underline{00}}$⟩

ASSIGNMENT SHEET #6

MARGINING WORKSHEET

Commodity____________________

Contract Month____________ Contract Size____________

Initial Margin Requirement__________ Maintenance Margin Level__________
(record as initial current balance)

DATE	PRICE	Price Change	Profit or loss	Margin Call	With-drawal	Current Balance	Net Sum Calls & Draws
		XXX	XXX	XXX	XXX		XXXX

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HEDGING
UNIT VI

ASSIGNMENT SHEET #7--CHART COMMODITY FUTURES PRICES

NAME ______________________ SCORE __________

Fundamental methods of analyzing the commodity market refer to supply and demand factors which affect the market. Technical analysis refers to analyzing the commodity market itself. Basically, individuals who subscribe to technical analysis believe that by studying statistics in a given market, it is possible to make deductions on future occurrences.

(NOTE: This assignment sheet is not intended as a detailed breakdown of charting patterns or trend analysis. It merely attempts to inform the cooperator of basic charting methods.)

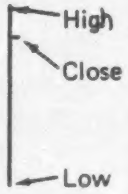
A. Bar charts are the most common method of recording price and volume information

1. Charting may be done on a daily, weekly, monthly, or yearly schedule

   (NOTE: We will use daily charting in our discussion.)

2. The bar chart indicates a range between a high, low, open, or close for a given commodity

   Example:



B. The chart depicted on the following page is a chart for a thirty-one day period on March 1981, Kansas City Wheat Futures Contract.

ASSIGNMENT SHEET #7

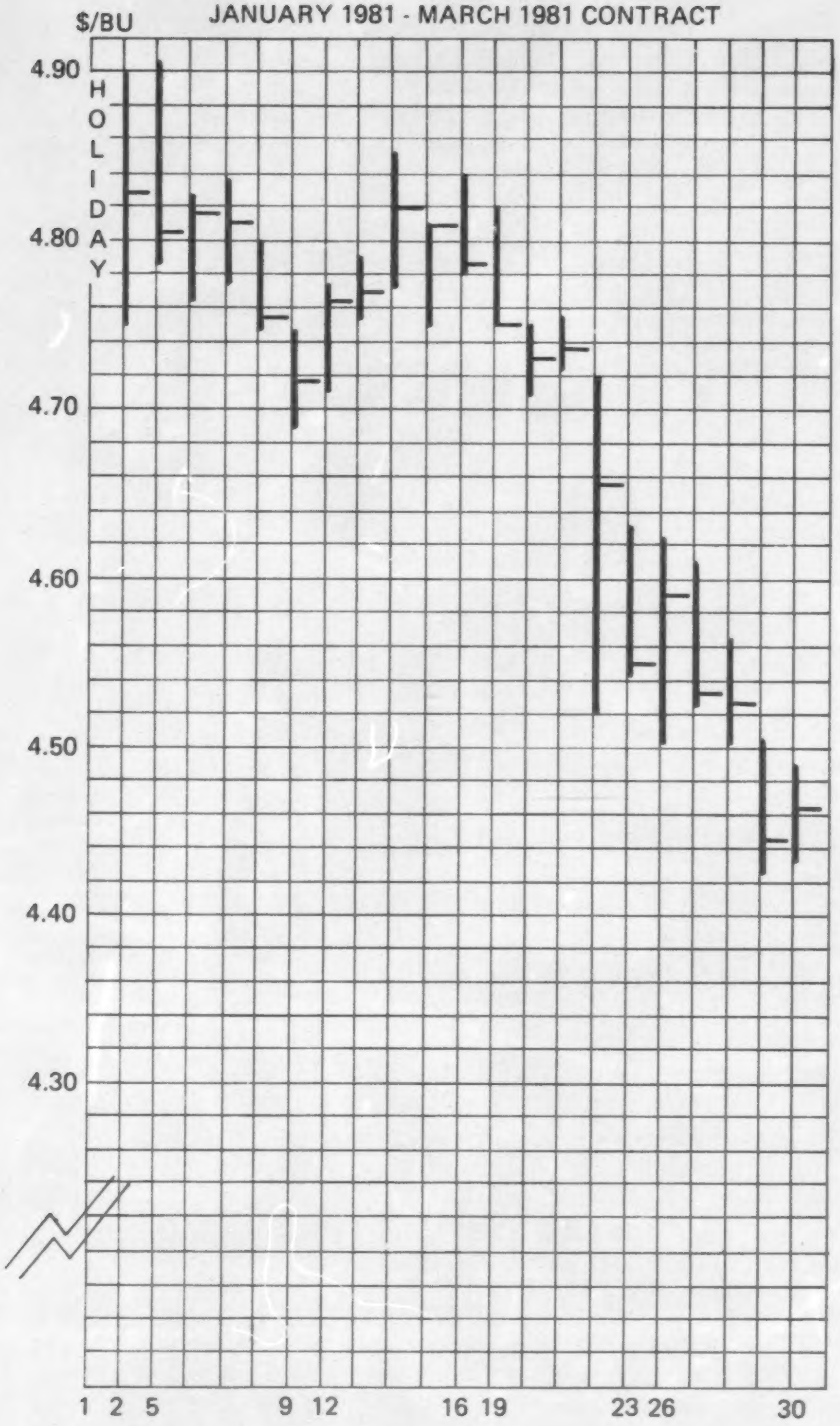
KANSAS CITY WHEAT FUTURES PRICE

MARCH 1981 CONTRACT BEING TRADED IN JANUARY 1981

DATE	HIGH	LOW	CLOSE
1	HOLIDAY--NEW YEAR'S		
2	4.90	4.75	4.82 1/2
5	4.90 1/2	4.78 1/2	4.80 1/2
6	4.82 1/2	4.76 1/4	4.81 3/4
7	4.82 1/2	4.77 1/2	4.81
8	4.80	4.75	4.75 1/2
9	4.74 3/4	4.69	4.71 3/4
12	4.77 1/2	4.71	4.76 1/2
13	4.79	4.75 1/2	4.77
14	4.85	4.77	4.82
15	4.81	4.74 3/4	4.81
16	4.84	4.78	4.78 1/2
19	4.82	4.75	4.75
20	4.75	4.71	4.73
21	4.75 1/4	4.72 1/2	4.73 1/4
22	4.72	4.52	4.65 1/2
23	4.63	4.54 1/2	4.55
26	4.62 1/4	4.50 1/4	4.59
27	4.61	4.53	4.53 1/2
28	4.56 1/2	4.50 3/4	4.53 1/4
29	4.51	4.42 1/2	4.44 1/2
30	4.49 1/4	4.43	4.46 1/4

(NOTE: You will notice some days are missing in the month. These days are weekends and holidays. There is no trading on weekends and holidays in the commodity futures markets.)

ASSIGNMENT SHEET #7



ASSIGNMENT SHEET #7

The chart on the previous page is explained easily. Looking at January 2 (the second bar on the chart), you will note the high is $4.90, the low is $4.75, and the market closed at $4.82-1/2. This indicates that during the day, at some point in the trading, the price reached $4.90 per bushel and dropped to a low of $4.75 per bushel. When trading had stopped for the day, the last contract traded was traded at $4.82-1/2 per bushel.

C. All commodity futures contracts are traded in much the same way as this wheat contract. Prices are quoted for all major commodities in most major daily newspapers as well as the *Wall Street Journal.* The prices are quoted for all months currently being traded on a certain commodity.

Use the figures below to chart the prices on the graph provided.

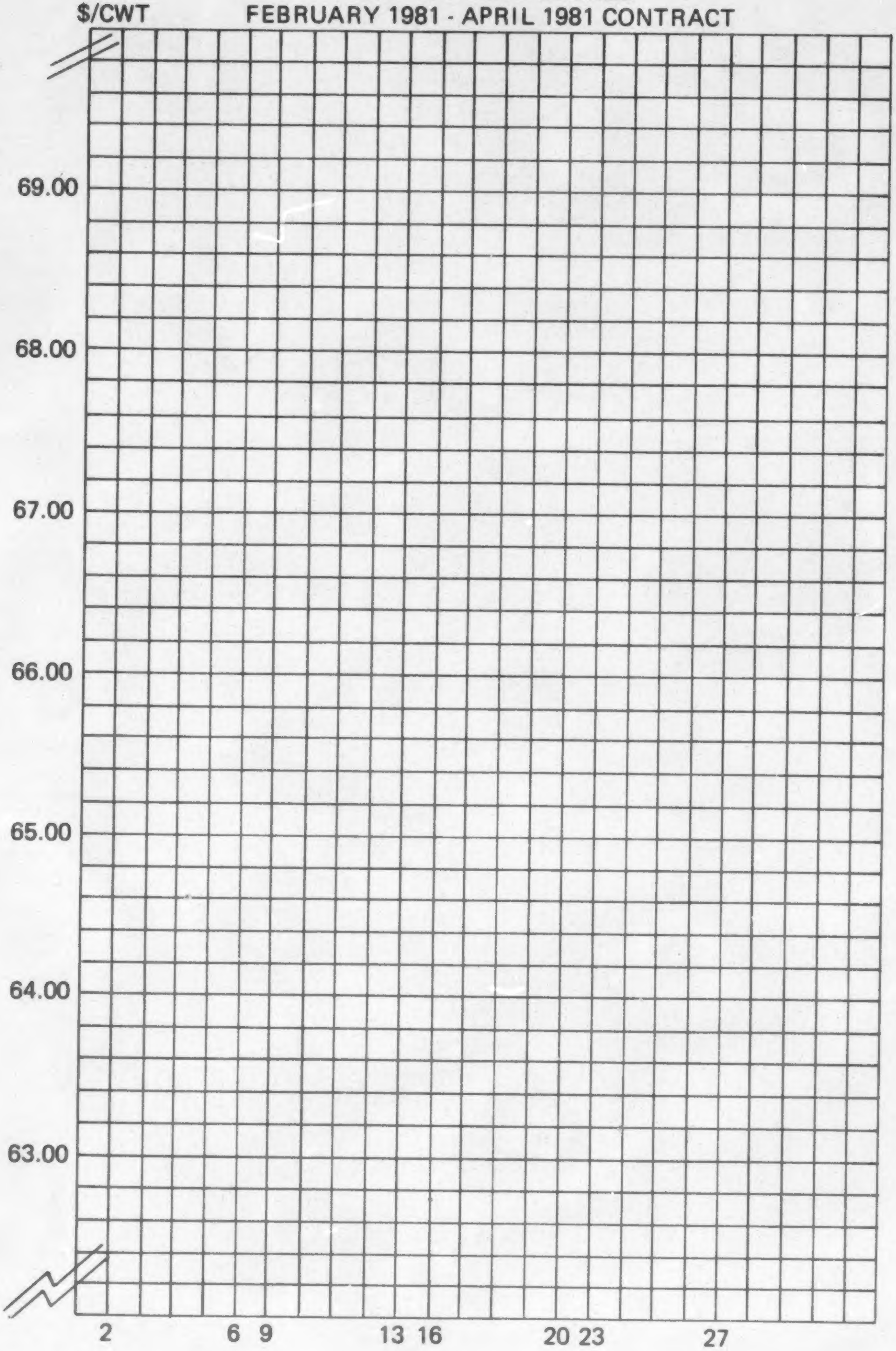
LIVE CATTLE FUTURES PRICE

APRIL 1981 CONTRACT BEING TRADED IN FEBRUARY 1981

DATE	HIGH	LOW	CLOSE
2	66.15	64.60	64.80
3	65.70	64.35	65.60
4	66.75	65.25	65.72
5	66.65	65.72	66.42
6	67.90	66.75	67.50
9	68.50	67.50	67.92
10	68.05	67.45	67.90
11	67.95	66.90	66.92
12	67.10	66.52	66.90
13	67.47	66.60	67.30
16	HOLIDAY-WASHINGTON'S BIRTHDAY		
17	68.45	66.75	67.55
18	67.70	66.80	66.90
19	67.45	66.65	67.40
20	67.25	66.10	66.27
23	66.05	65.35	65.97
24	66.47	65.90	66.25
25	65.95	65.30	65.60
26	65.97	65.60	65.60
27	65.42	64.60	65.05

ASSIGNMENT SHEET #7

LIVE CATTLE FUTURES
FEBRUARY 1981 - APRIL 1981 CONTRACT



HEDGING
UNIT IV

ANSWERS TO ASSIGNMENT SHEETS

Assignment Sheet #1

	Per Head	Per CWT	Breakeven Price
Variable costs	$657.35	$65.74	$65.74
500 lb. stocker steers @ $87.50/cwt	= $437.50		
Vet medicine	= 4.50		
3,342 lbs. of mixed feed @ $100.00/ton	= 167.10		
Hauling 600 miles @ .02/mile	= 12.00		
Sales commission @ $1.25/head	= 1.25		
14% interest on operating capital @ $35.00/head	= 35.00		
Fixed costs	$ 10.80	$ 1.08	$66.82
Depreciation on feed lot @ $10.00/head Taxes and insurance on feedlot @ $.80/head			
Management costs	$ 20.00	$ 2.00	$68.82
Profit objective.	$ 10.00	$ 1.00	$69.82
Asking price.	$698.15	$69.82	

The cooperator would not feed out steers if returns would not exceed variable costs of $65.74/cwt.

Assignment Sheet #2

Quoted futures price.	$67.92/cwt
Basis adjustment.	$-1.50/cwt
Hedging costs	$ .20/cwt
Localized futures price	$66.22/cwt

ASSIGNMENT SHEET #3

DATE	GUYMON CASH MARKET PRICE FOR SLAUGHTER STEERS; JANUARY 1981	CME FUTURES PRICE FOR LIVE CATTLE FEBRUARY DELIVERY; JANUARY 1981 (Closing price)	DIFFERENCE OR BASIS
1	Holiday	Holiday	Holiday
2	$67.25	$67.92	-.67
5	67.25	67.92	-.67
6	67.25	68.02	-.77
7	67.25	67.32	-.07
8	67.25	66.55	+.70
9	67.25	66.15	+1.10
12	67.25	66.45	+.80
13	67.25	66.67	+.58
14	67.37	66.02	+1.35
15	66.75	66.50	+.25
16	66.75	66.12	+.63
19	66.25	65.70	+.55
20	65.50	64.92	+.58
21	65.75	64.77	+.98
22	65.75	64.30	+1.45
23	65.25	64.30	+.95
26	64.25	62.60	+1.65
27	64.50	62.10	+2.40
28	64.50	62.40	+2.10
29	63.00	61.75	+1.25
30	62.75	62.40	+.35

Assignment Sheet #4

CASH MARKET		FUTURES MARKET	BASIS
Expected hedged price	$49.35	Sell futures $51.25	Expected – $1.90
Sell hogs on the cash market	$51.25	Buy futures $53.00	Realized – $1.75
Difference	+$1.90	-1.75	+$0.15

PRICING RESULTS

Local price for grain sorghum	$51.25
Futures loss	-$ 1.75
Net realized hedged price	$49.50

Assignment Sheet #5

CASH MARKET		FUTURES MARKET	BASIS
Expected hedged price	$3.25	Sell futures @ $3.50	Expected $0.25
Sell grain sorghum locally	$3.43	Buy futures @ $3.73	Realized $0.30
Difference	+0.18	-0.23	-$0.05

PRICING RESULTS

Local price for grain sorghum	$3.43
Futures loss	-$0.23
Net realized hedged price	$3.20

ASSIGNMENT SHEET #6

MARGINING WORKSHEET

Commodity LIVE BEEF CATTLE

Contract Month AUGUST

Contract Size 40,000 lbs.

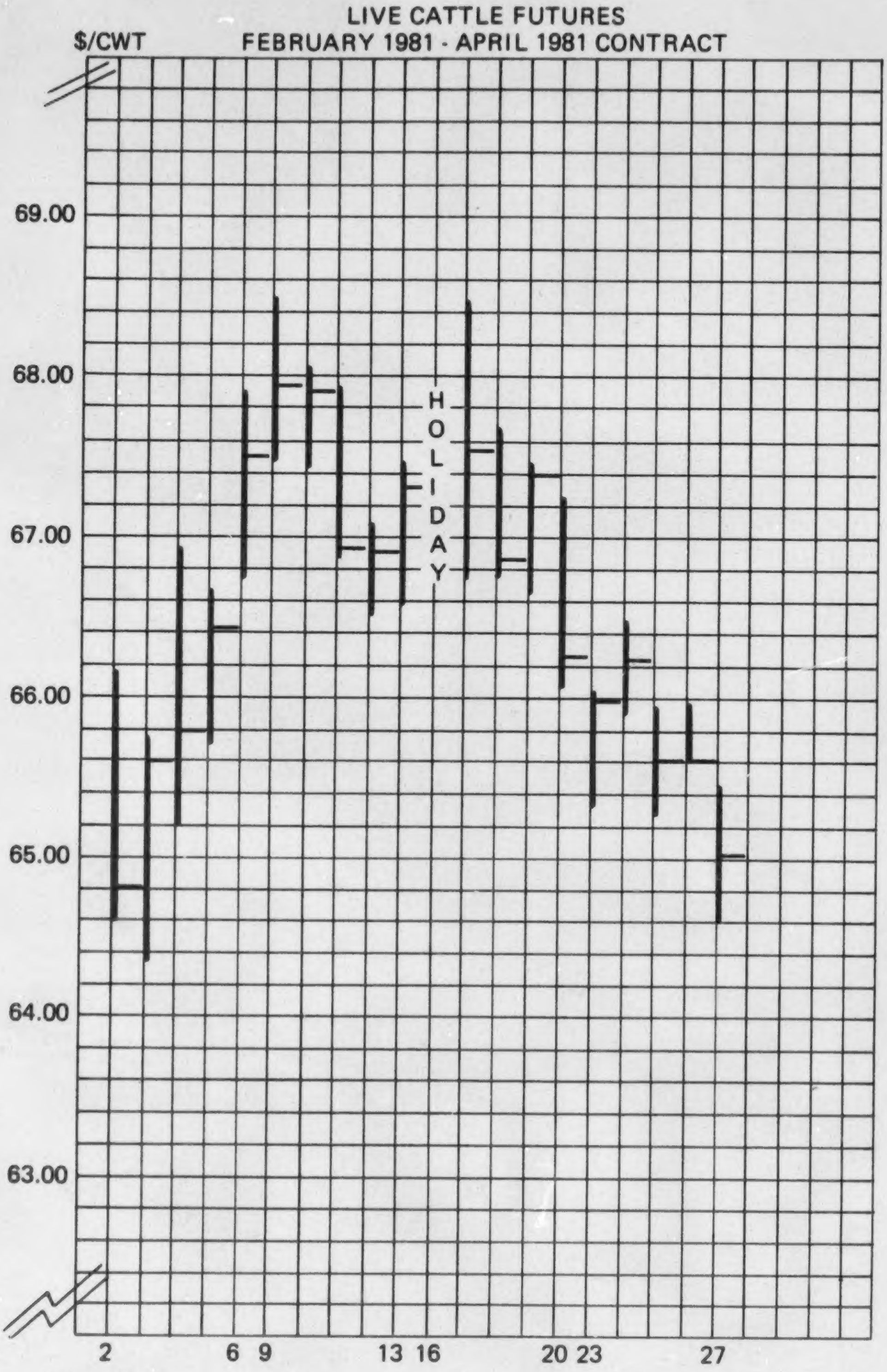
Initial Margin Requirement 1250^{00}
(record as initial current balance)

Maintenance Margin Level 1000^{00}

DATE	PRICE	Price Change	Profit or loss	Margin Call	With-drawal	Current Balance	Net Sum Calls & Draws
April 2	70^{00}	XXX	XXX	XXX	XXX	1250^{00}	XXXX
4	70^{50}	+50	<200^{00}>			1050^{00}	
6	71^{50}	+100	<400^{00}>	600^{00}		1250^{00}	<600^{00}>
9	73^{00}	$+1^{50}$	<600^{00}>	600^{00}		1250^{00}	<1200^{00}>
19	74^{90}	$+1^{90}$	<760^{00}>	760^{00}		1250^{00}	<1960^{00}>
30	76^{60}	$+1^{60}$	<640^{00}>	640^{00}		1250^{00}	<2600^{00}>
May 9	72^{20}	-4^{30}	$+1720^{00}$		1720^{00}	1250^{00}	<880^{00}>
22	72^{40}	+20	<80^{00}>			1170^{00}	<880^{00}>
June 1	68^{20}	-4^{20}	$+1680^{00}$		1680^{00}	1170^{00}	800^{00}
14	66^{90}	-1^{30}	$+520^{00}$		520^{00}	1170^{00}	1320^{00}
25	65^{60}	-1^{20}	$+520^{00}$		520^{00}	1170^{00}	1840^{00}
July 5	68^{60}	$+3^{00}$	<1200^{00}>	1280^{00}		1250^{00}	560^{00}
16	68^{80}	+20	<80^{00}>			1170^{00}	560^{00}
26	64^{20}	-4^{60}	$+1840^{00}$		1840^{00}	1170^{00}	2400^{00}
Aug. 1	59^{00}	-5^{20}	$+2080^{00}$		2080^{00}	1170^{00}	4480^{00}
6	57^{40}	-1^{60}	$+640^{00}$		1760^{00}	-0-	6240^{00}

$50 Commission

ASSIGNMENT SHEET #7



HEDGING
UNIT VI

TEST

NAME ______________________________ SCORE ______________

1. Match terms associated with hedging to the correct definitions. Write the correct numbers in the blanks provided.

_____a. Combination of an initiating purchase or sale of a futures contract and offsetting sale or purchase of an equal number of futures contracts of the same delivery month

_____b. Total of variable costs, fixed costs, management costs, and profit objectives

_____c. Futures price adjusted for basis and hedging costs

_____d. Seller incurs a binding commitment to deliver the product as described in the contract on the dates specified in the contract, unless the seller takes an equal and offsetting action prior to the contract's maturity date

_____e. Buyer incurs a binding commitment to accept delivery of the product as described in the contract on the dates specified in the contract, unless the buyer takes an equal and offsetting action prior to the contract's maturity date

_____f. Difference between a cash price at a specific location and the price of a particular futures contract; may refer to a specific futures contract or a marketing location

_____g. Initiation of a position in a futures market that is intended as a temporary substitute for the sale or purchase of the actual commodity

_____h. Any of a number of technical formations used by traders to forecast the direction and momentum of the market based on the historical gyrations of the contract

1. Sell contract
2. Chart pattern
3. Localized futures price
4. Round turn
5. Hedging
6. Buy contract
7. Asking price
8. Basis

_____i. That side which helps measure trader reaction to fundamentals

_____j. That having to do with the physical supply-demand side of the market

_____k. Term pertaining to fundamental or technical forces likely to move the market up

_____l. Term used to describe forces likely to put the market down

_____m. Situation where cash prices are losing on nearby futures

_____n. Situation where cash prices are gaining on nearby futures

_____o. Fee a brokerage firm charges a customer for filling a speculative or hedging transaction in the futures market

_____p. Number of outstanding positions in a market at any given time

_____q. Total trades made in a market over a given period, usually expressed as the number of contracts traded in daily terms

_____r. Federal regulatory agency charged and empowered under the Commodity Futures Trading Commission Act of 1974 with regulatory powers over futures trading in all commodities

_____s. Standards of grades of commodities listed in the rules of exchange that must be met when delivering cash commodities against futures contracts

_____t. Notice that must be presented by the seller to the clearinghouse where the notices and the subsequent delivery instruments are assigned to the longest standing buyer on record

_____u. Call for additional margin when funds in a trading account fall below levels required by the brokerage firm

_____v. Earnest money deposited with a brokerage firm when a position is taken in the market

9. Bearish
10. Basis "narrowing"
11. Fundamental side of the market
12. Bullish
13. Technical side of the market
14. Basis "widening"
15. Contract grades
16. Commission
17. Volume
18. Open interest
19. Commodity Futures Trading Commission (CFTC)
20. Margin deposit
21. Margin call
22. Notice of intention to deliver

_____w. Standing market order to put a speculator or hedger out of an existing market position if predetermined price level is touched

_____x. Shorts leave the market by buying back previously sold positions

_____y. To sell a futures contract

_____z. Longs leave the market by selling out an existing position

_____aa. To buy a futures contract

_____bb. Final trading day in a futures contract

_____cc. The crop to be harvested for the coming crop year

_____dd. The most recent crop harvested

_____ee. Twelve-month period between the beginning of harvest of one crop and that of the succeeding crop

_____ff. Moving a hedge position from a nearby futures contract to a more distant one

23. Short covering
24. Stop order
25. Go long the market
26. Go short the market
27. Old crop
28. Long liquidation
29. New crop
30. Expiration of a contract
31. Crop year
32. "Roll over" a hedge

2. Select from the list below advantages of futures markets as compared to cash contracts. Mark each correct answer with an "X."

_____a. Are usually negotiable

_____b. Provides maximum pricing flexibility in contracts which may be bought or sold at any time

_____c. Provides for prepayment

_____d. Insures a competitive market because prices are determined in a highly active market with a large volume of trading

_____e. May offer slightly higher prices for the same quality product

3. Distinguish between hedging and speculation. Mark an "X" in the correct blank describing *hedging*.

_____a. Allows cooperators to establish a position in the market with crops or livestock to reduce price risk associated with producing these commodities

_____b. Allows an individual to take a position in the futures market, but not have possession of the commodity being traded or does not control enough of the actual commodity to cover those positions in the market

4. State the questions relevant to any forward pricing hedge. Write your answer in the blanks provided.

   a. ____

   ____

   b. ____

   ____

5. Arrange in order steps of the basic hedging procedure. Write in the correct blanks a "1" for the first step, a "2" for the second step, and so on.

   _____a. Localize the futures price

   _____b. Make the hedging decision

   _____c. Determine the hedging objective

   _____d. Estimate potential costs and returns

   _____e. Complete the hedge

6. List reasons that might motivate a cooperator to forward price a commodity. Write your answer in the blanks provided.

   a. ____

   b. ____

7. Match steps in estimating potential costs and returns to the correct descriptions. Write the correct numbers in the blanks provided.

   _____a. Return for taking the risks associated with producing a particular commodity

   _____b. What the producer expects to allocate to one's own management input

   _____c. Costs that are the same regardless of the levels of production and are unavoidable even if nothing is produced

   _____d. Costs that will be higher at higher levels of production and may be avoided completely if nothing is produced

   _____e. Expenses associated with producing a commodity

   1. Management costs
   2. Variable costs
   3. Production costs
   4. Profit objective
   5. Fixed costs

8. Arrange in order the procedure for localizing futures prices. Write in the correct blanks a "1" for the first step, a "2" for the second step, and so on.

_____a. Calculate localized futures price by adjusting futures price for basis and hedging costs

_____b. Determine hedging costs

_____c. Select the appropriate contract month to use for hedge

_____d. Calculate the basis

9. Select from the list below characteristics of basis. Mark each correct answer with an "X" in the blanks provided.

_____a. Refers to any cash market quota compared to any futures market quota

_____b. Refers to specific qualities of products at a specific market location a specified delivery dates for cash and futures markets

_____c. May refer to different delivery times

_____d. Basis always insures a profit

_____e. Refers to any cash market price compared to any futures market price

_____f. Is the same for all locations

_____g. May be different for differences in marketing locations and methods

_____h. Is calculated as the difference between cash market price and futures market price

10. List sources of basis. Write your answer in the space provided.

a. ______________________________

b. ______________________________

11. State four hedging guidelines. Write your answer in the blanks provided.

a. ______________________________

____

b. ______________________________

____

c. ______________________________

____

d. ______________________________

____

12. Discuss completing a hedge. Write your answer in the space provided.

____

____

____

____

____

____

13. Arrange in order steps in a livestock hedging tabulation. Write in the correct blanks a "1" for the first step, a "2" for the second step, and so on.

_____a. Localize futures prices

_____b. Estimate potential costs and returns

_____c. Analyze financial position and determine objectives

_____d. Complete the hedging decision

_____e. Make hedging decision

14. List sources of wheat basis. Write your answer in the space provided.

a. ____

b. ____

15. State steps in a crop hedging tabulation. Write your answer in the space provided.

a. ____

b. ____

c. ____

d. ____

e. ____

16. Complete the commodity futures specifications chart on the following pages.

COMMODITY FUTURES CONTRACTS SPECIFICATIONS

Commodity	Where traded	Contract specifications	Delivery points
a.________	Chicago Board of Trade; Kansas City Board of Trade; Minneapolis Grain Exchange; Midamerica Commodity Exchange	5,000 bushels of No. 2 Dark Hard Winter wheat, Heavy Dark Hard Winter wheat, Hard Winter wheat, Yellow Hard Winter wheat	Kansas City, Missouri; Kansas City, Kansas
Corn	Chicago Board of Trade; Mid-America Commodity Exchange	b.________________	Chicago, Illinois; Toledo, Ohio; St. Louis, Missouri
Soybeans	Chicago Board of Trade; Midamerica Commodity Exchange	5,000 bushels of No. 2 Yellow soybeans	c.________________
d.________	Chicago Board of Trade	60,000 pounds of oil (one standard tank car)	Chicago, Illinois
Soybean meal	e.____________________	100 tons of meal	Iowa; Illinois; Missouri; Indiana; Ohio; Kentucky; Tennessee; Arkansas; Alabama; Mississippi
Cotton	f.____________________	100 bales or 50,000 pounds of No. 2 middling-grade 1-1/16 inch cotton	New Orleans, Louisiana; Memphis, Tennessee; Greenville, South Carolina
Cattle	Chicago Mercantile Exchange	g.________________ ________________	Omaha, Nebraska; Sioux City, Iowa; Peoria, Illinois; Guymon, Oklahoma
h.________	Chicago Mercantile Exchange	44,000 pounds of choice and good grades as defined in the Official U.S. Standards for Grades of Feeder Cattle	Omaha, Nebraska; Sioux City, Iowa; Oklahoma City, Oklahoma
Live hogs	Chicago Mercantile Exchange	30,000 pounds of USDA Grades No. 1, 2, 3, and 4 barrows and gilts with allowances for deviatons	i.________________

Commodity	Where traded	Contract specifications	Delivery points
Frozen pork bellies	j.____________________	38,000 pounds of Green Square-Cut Seedless Bellies bearing USDA Meat Inspection Divisions inspection legend of Standard Grade established by the Exchange	Chicago, Illinois
Iced broilers	k.____________________	30,000 pounds of USDA Grade A, whole Eviscerated broiler-fryer chickens with wrapped neck and giblets; iced, packed, and ready to cook in the 2.5 to 3.5 pound range in natural proportions	Arkansas; Mississippi; Alabama; Georgia
Eggs	Chicago Mercantile Exchange	22,500 dozen (one carload) of U.S. Extras 90% "A" quality or better with no case under 65% "A" quality large or wholesale grades	l.________________

17. Discuss margin requirements. Write your answer in the space provided.

18. Select from the list below qualities to look for in a broker. Mark each correct answer with an "X" in the blanks provided.

_____a. Ability to trade securities as well as commodities

_____b. Knowledge about production agriculture

_____c. Should have broker's best interest at heart

_____d. Knowledge about hedging and not just speculation

_____e. Should have best interests of the trader as the primary concern

_____f. Should understand producer motivations

_____g. Exclusive handling of commodity markets to insure adequate time is spent in analysis of these markets

19. Distinguish between the do's and don'ts of hedging. Mark an "X" in the correct blanks by the *do's*.

_____a. Hedge unless you have or have made arrangements to get enough margin money to complete the hedge

_____b. Let your broker make decisions for you

_____c. Let a price that is perfectly acceptable slip away while you are waiting for futures prices possibly to go a few cents higher ______d. Select a commodity broker who understands hedging and knows your farming objectives

______e. Become thoroughly familiar with the futures markets and how to use them in hedging before attempting to hedge

______f. View the futures market as a cash outlet for your commodity

______g. Find a lender who understands hedging to finance production and hedging activities

______h. Hedge unless you know your local basis pattern

______i. Try to outguess the market

______j. Buy futures to offset your previous sale at the same time you establish a price for your commodity at the local market

______k. Fail to offset futures commitments when you sell your commodity

______l. Remember that a cooperator who does not forward price is, in a sense, a speculator

______m. Sell futures in amounts greater than the volume you are confident you can produce

______n. Confuse hedging with futures market speculation

______o. Change pricing objectives in the middle of a hedge

______p. Forward price feed cost when you forward price your lifestock to reduce risk of rising production costs

______q. Try a few hedges "on paper" to become familiar with hedging mechanics and to convince yourself that futures price changes will be offset by local market prices for the commodity

______r. Determine your pricing objectives before hedging

______s. Hedge by selling futures contracts that mature nearest to, but not before, you expect to deliver your commodity

______t. Make futures market transactions until you understand what you are doing

______u. Be prepared to meet all calls for additional margin money

______v. Know your production costs

______w. Hedge only a small portion of your anticipated production, if possible, until you are convinced that forward pricing can do what you want it to do for you

20. Calculate asking price.
21. Calculate localized futures price.
22. Determine historical basis.
23. Calculate net realized hedged price on a livestock futures hedge.
24. Calculate net realized hedged price on a grain futures hedge.
25. Determine the margin account for a live cattle contract.
26. Chart commodity futures prices.

(NOTE: If any of the above activities have not been done before the test, ask the instructor when they should be finished.)

HEDGING
UNIT VI

ANSWERS TO TEST

1. a. 4
   b. 7
   c. 3
   d. 1
   e. 6
   f. 8
   g. 5
   h. 2
   i. 13
   j. 11
   k. 12
   l. 9
   m. 14
   n. 10
   o. 16
   p. 18
   q. 17
   r. 19
   s. 15
   t. 22
   u. 21
   v. 20
   w. 24
   x. 23
   y. 26
   z. 28
   aa. 25
   bb. 30
   cc. 29
   dd. 27
   ee. 31
   ff. 32
2. b, d, e
3. a
4. a. What price is the futures market offering for my commodity?
   b. How much potential profit does that price represent?
5. a. 3
   b. 4
   c. 1
   d. 2
   e. 5

6. a. Higher prices
   b. More certain prices
7. a. 4
   b. 1
   c. 5
   d. 2
   e. 3
8. a. 4
   b. 3
   c. 1
   d. 2
9. b, c, e, g, h
10. a. Historical price relationships between futures prices and local cash market prices
    b. Delivery costs
11. Answer should include any four of the following:
    a. Become familiar with futures markets before attempting to hedge
    b. Try a few hedges "on paper" before actually taking a position in the market
    c. Set goals and objectives before hedging
    d. Be prepared to meet margin calls
    e. Find a banker who understands hedging
    f. Find a broker who understands hedging
    g. Cooperator would never hedge at a forward price less than the expected variable costs
    h. Cooperator is more likely to hedge if the localized futures price is above the asking price
    i. Cooperator with an objective of a higher price will not likely hedge at any price below the asking price
    j. Cooperator with an objective of a more certain price might be willing to hedge at a localized futures price less than the asking price

12. Discussion should include:
    a. Should be completed by offsetting futures contract and buying/selling the commodity as near the same time as possible
    b. After hedge is completed, it should be evaluated in terms of the objective

13. a. 3
    b. 2
    c. 1
    d. 5
    e. 4

14. a. Kansas City Board of Trade wheat futures prices
    b. Export prices from the Gulf of Mexico

15. a. Analyze financial position and determine objectives
    b. Estimate potential costs and returns
    c. Localize futures prices
    d. Make hedging decision
    e. Complete the hedging decision

16. a. Wheat
    b. 5,000 bushels of No. 2 Yellow corn
    c. Chicago, Illinois warehouses
    d. Soybean oil
    e. Chicago Board of Trade
    f. New York Cotton Exchange; Mid-America Commodity Exchange
    g. 40,000 lbs of choice grade, according to USDA standards, slaughter cattle liveweight
    h. Feeder cattle
    i. Chicago, Illinois
    j. Chicago Mercantile Exchange
    k. Chicago Board of Trade
    l. Chicago, Illinois

17. Discussion should include:
    - a. Margins are determined on the basis of probable risk or loss
        1. Cooperator's margins must be maintained at specified minimum levels
        2. If future's price movement is adverse to the cooperator's position, additional deposits will be required to bring the margin deposit back to the initial level
    - b. Initial margin is the cooperator's primary deposit
    - c. Maintenance margin is the amount which must be present at all times in the account
    - d. Commission is the amount the broker earns for each round turn per contract
18. b, d, e, f, g
19. d, e, g, j, l, p, q, r, s, u, v, w
20. Evaluated to satisfaction of instructor
21. Evaluated to satisfaction of instructor
22. Evaluated to satisfaction of instructor
23. Evaluated to satisfaction of instructor
24. Evaluated to satisfaction of instructor
25. Evaluated to satisfaction of instructor
26. Evaluated to satisfaction of instructor

CAPITAL BUDGETING
UNIT VII

UNIT OBJECTIVE

After completion of this unit, the cooperator should be able to discuss capital budgeting and evaluate the economic worth of capital expenditure proposals. This knowledge will be evidenced through discussion of information sheets, actual use on the farm, and by completion of assignment sheets and unit test with a minimum of 85 percent accuracy.

SPECIFIC OBJECTIVES

After completion of this unit, the cooperator should be able to:

1. Match terms associated with capital budgeting to the correct definitions.
2. State uses of capital budgeting.
3. Arrange in order steps in evaluating capital expenditure proposals.
4. Select from a list characteristics of net cash flows.
5. Select from a list characteristics of future value of a present sum.
6. State the use of present value of a future sum.
7. Select from a list characteristics of present value of a uniform and non-uniform series of payments.
8. State the use of a future value of a uniform and non-uniform series of payments.
9. Name techniques used to evaluate investment alternatives.
10. Select from a list characteristics of net present value in evaluating an investment proposal.
11. Calculate the future value of a present sum with one-year conversion periods.
12. Calculate the future value of a present sum.
13. Calculate the present value of a future sum.
14. Calculate present value in a uniform and non-uniform series of payments.
15. Calculate future value in a uniform and non-uniform series of payments.
16. Compare net present values.

17. Calculate simple rate of return.

18. Calculate payback period.

19. Calculate capital recovery.

20. Compute savings per conversion period to reach a designated level in a specified time period.

21. Calculate how much debt may be supported with a given series of cash flows.

22. Compare payback period, simple rate of return, and net present value methods of investment evaluation in an agricultural setting.

CAPITAL BUDGETING
UNIT VII

UNIT OBJECTIVE

After completion of this unit, the cooperator should be able to discuss capital budgeting and evaluate the economic worth of capital expenditure proposals. This knowledge will be evidenced through discussion of information sheets, actual use on the farm, and by completion of assignment sheets and unit test with a minimum of 85 percent accuracy.

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After completion of this unit, the cooperator should be able to:

1. Match terms associated with capital budgeting to the correct definitions.
2. State uses of capital budgeting.
3. Arrange in order steps in evaluating capital expenditure proposals.
4. Select from a list characteristics of net cash flows.
5. Select from a list characteristics of future value of a present sum.
6. State the use of present value of a future sum.
7. Select from a list characteristics of present value of a uniform and non-uniform series of payments.
8. State the use of a future value of a uniform and non-uniform series of payments.
9. Name techniques used to evaluate investment alternatives.
10. Select from a list characteristics of net present value in evaluating an investment proposal.
11. Calculate the future value of a present sum with one-year conversion periods.
12. Calculate the future value of a present sum.
13. Calculate the present value of a future sum.
14. Calculate present value in a uniform and non-uniform series of payments.
15. Calculate future value in a uniform and non-uniform series of payments.
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17. Calculate simple rate of return.

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20. Compute savings per conversion period to reach a designated level in a specified time period.

21. Calculate how much debt may be supported with a given series of cash flows.

22. Compare payback period, simple rate of return, and net present value methods of investment evaluation in an agricultural setting.

CAPITAL BUDGETING
UNIT VII

SUGGESTED ACTIVITIES

I. Suggested activities for instructor:

A. Provide each cooperator with objective sheet.

B. Provide each cooperator with information and assignment sheets.

C. Discuss unit and specific objectives.

D. Discuss information and assignment sheets.

E. Capital budgeting concepts may be rather difficult to grasp at a first glance. It is extremely important that the instructor grab the attention of the cooperator as early as possible when teaching this unit. Provide the class with large number of examples as to how this technique can be used on their own farm. If the cooperator can find an example which is relevant to his/her situation, the concept will be much easier to get across and much easier for the cooperator to master.

F. Use a testimonial speech or tell motivating story.

Example: An old-timer tells about coming to a long stretch of unimproved country road with his new Model T in early spring. At the side of the road was a sign which obviously had been placed there by someone coming from the opposite direction. It read "Choose your ruts carefully, you'll be in them for the next 30 miles." Similar advice seems applicable to modern agriculture with its investments in costly and specialized farm assets

G. If instructor has access to a micro-computer or programmable calculator, software demonstrating several capital budgeting concepts is available from Oklahoma State University Ag. Economics Department, Ag. Hall 513, Stillwater, OK, 74078.

H. Have a resource person visit with the class on the time value of money.

Examples: Investment broker; banker or Ag. lender; real estate broker; insurance salesperson; C.P.A.

I. Cooperators will need to bring a calculator to assist math problems on assignment sheet.

J. Give test.

K. Critique test.

L. Reteach, if necessary.

II. Instructional materials:

A. Objective sheet

B. Information sheet

C. Assignment sheets

1. Assignment Sheet #1--Calculate the Future Value of a Present Sum with One-Year Conversion Periods
2. Assignment Sheet #2--Calculate the Future Value of a Present Sum
3. Assignment Sheet #3--Calculate the Present Value of a Future Sum
4. Assignment Sheet #4--Calculate Present Value in a Uniform and Non-Uniform Series of Payments
5. Assignment Sheet #5-Calculate Future Value in a Uniform and Non-Uniform Series of Payments
6. Assignment Sheet #6--Compare Net Present Values
7. Assignment Sheet #7--Calculate Simple Rate of Return
8. Assignment Sheet #8--Calculate Payback Period
9. Assignment Sheet #9--Calculate Capital Recovery
10. Assignment Sheet #10--Compute Savings Per Conversion Period to Reach a Designated Level in a Specified Time Period
11. Assignment Sheet #11--Calculate How Much Debt May Be Supported with a Given Series of Cash Flows
12. Assignment Sheet #12--Compare Payback Period, Simple Rate of Return, and Net Present Value Methods of Investment Evaluation in an Agricultural Setting

D. Answers to assignment sheets

E. Test

F. Answers to test

III. Unit references:

A. Roush, Clint E. *Class Notes, Agricultural Economics 3603, Agricultural Finance I*. Stillwater: Department of Agricultural Economics/Oklahoma State University, 1977.

B. Barry, Peter J., Hopkin, John A., and Baker, C.B. *Financial Management in Agriculture*. Danville, Illinois: The Interstate Printers & Publishers, Inc., 1979.

C. Hayenga, Wayne A. *Investment Analysis--Capital Budgeting Methods*. College Station, Texas: Texas Agricultural Extension Service/Texas A&M University, Fact Sheet No. L-1091, 1976.

D. Aplin, Richard D., Casler, George L., and Francis, Cheryl P. *Capital Investment Analysis: Using Discounted Cash Flows.* Columbus, Ohio: GRID, Inc., 1977.

E. Bierman, Harold Jr., and Smidt, Seymour. *The Capital Budgeting Decision.* New York; Macmillan Publishing Co., 1975.

F. Walrath, Arthur J. *Evaluation of Investment Opportunities: Tools for Decision-making in Farming and Other Businesses.* U.S. Department of Agriculture, Economics Research Service in Cooperation with the College of Agriculture and Life Sciences, Virginia Polytechnic Institute and State University, Agriculture Handbook No. 349.

G. Tubbs, A.R. *An Introduction to Present Value Methods of Evaluating Capital Investments including Compound and Discount Tables,* Farm Management Finance Publication 742. Stillwater: Department of Agricultural Economics, Oklahoma State University, April, 1972.

H. Additional reference--Barry, Peter J., Hopkin, John A., and Baker, C. B. *Financial Management in Agriculture,* Second edition. Danville, Illinois: Interstate Printers and Publishers, 1979.

(NOTE: See following pages.)

Compound and Discount Factor Tables

APPENDIX TABLE I

Future Value of $1.00

$V_N = \$1(1+i)^N$

n	.5%	1%	1.5%	2%	2.5%	3%	3.5%	4%	5%	6%
1	1.005	1.010	1.015	1.020	1.025	1.030	1.035	1.040	1.050	1.060
2	1.010	1.020	1.030	1.040	1.051	1.061	1.071	1.082	1.103	1.124
3	1.015	1.030	1.046	1.061	1.077	1.093	1.109	1.125	1.158	1.191
4	1.020	1.041	1.061	1.082	1.104	1.126	1.148	1.170	1.216	1.262
5	1.025	1.051	1.077	1.104	1.131	1.159	1.188	1.217	1.276	1.338
6	1.030	1.062	1.093	1.126	1.160	1.194	1.229	1.265	1.340	1.419
7	1.036	1.072	1.110	1.149	1.189	1.230	1.272	1.316	1.407	1.504
8	1.041	1.083	1.126	1.172	1.218	1.267	1.317	1.369	1.477	1.594
9	1.046	1.094	1.143	1.195	1.249	1.305	1.363	1.423	1.551	1.690
10	1.051	1.105	1.161	1.219	1.280	1.344	1.411	1.480	1.629	1.791
11	1.056	1.116	1.178	1.243	1.312	1.384	1.460	1.539	1.710	1.898
12	1.062	1.127	1.196	1.268	1.345	1.426	1.511	1.601	1.796	2.012
13	1.067	1.138	1.214	1.294	1.379	1.469	1.564	1.665	1.886	2.133
14	1.072	1.149	1.232	1.319	1.413	1.513	1.619	1.732	1.980	2.261
15	1.078	1.161	1.250	1.346	1.448	1.558	1.675	1.801	2.079	2.397
16	1.083	1.173	1.269	1.373	1.485	1.605	1.734	1.873	2.183	2.540
17	1.088	1.184	1.288	1.400	1.522	1.653	1.795	1.948	2.292	2.693
18	1.094	1.196	1.307	1.428	1.560	1.702	1.857	2.026	2.407	2.854
19	1.099	1.208	1.327	1.457	1.599	1.754	1.923	2.107	2.527	3.026
20	1.105	1.220	1.347	1.486	1.639	1.806	1.990	2.191	2.653	3.207
25	1.133	1.282	1.451	1.641	1.854	2.094	2.363	2.666	3.386	4.292
30	1.161	1.348	1.563	1.811	2.098	2.427	2.807	3.243	4.322	5.743
40	1.221	1.489	1.814	2.208	2.685	3.262	3.959	4.801	7.040	10.286
50	1.283	1.645	2.105	2.692	3.437	4.384	5.585	7.107	11.467	18.420

n	7%	8%	9%	10%	12%	14%	16%	20%	25%
1	1.070	1.080	1.090	1.100	1.120	1.140	1.160	1.200	1.250
2	1.145	1.166	1.188	1.210	1.254	1.300	1.346	1.440	1.562
3	1.225	1.260	1.295	1.331	1.405	1.482	1.561	1.728	1.953
4	1.311	1.360	1.412	1.464	1.574	1.689	1.811	2.074	2.441
5	1.403	1.469	1.539	1.611	1.762	1.925	2.100	2.488	3.052
6	1.501	1.587	1.677	1.772	1.974	2.195	2.436	2.986	3.815
7	1.606	1.714	1.828	1.949	2.211	2.502	2.826	3.583	4.768
8	1.718	1.851	1.993	2.144	2.476	2.853	3.278	4.300	5.960
9	1.838	1.999	2.172	2.358	2.773	3.252	3.803	5.160	7.451
10	1.967	2.159	2.367	2.594	3.106	3.707	4.411	6.192	9.313
11	2.105	2.332	2.580	2.853	3.479	4.226	5.117	7.430	11.462
12	2.252	2.518	2.813	3.138	3.896	4.818	5.936	8.916	14.552
13	2.410	2.720	3.066	3.452	4.363	5.492	6.886	10.699	18.190
14	2.579	2.937	3.342	3.797	4.887	6.261	7.988	12.839	22.737
15	2.759	3.172	3.642	4.177	5.474	7.138	9.266	15.407	28.421
16	2.952	3.426	3.970	4.595	6.130	8.137	10.748	18.488	35.527
17	3.159	3.700	4.328	5.054	6.866	9.276	12.468	22.186	44.409
18	3.380	3.996	4.717	5.560	7.690	10.575	14.463	26.623	55.511
19	3.617	4.316	5.142	6.116	8.613	12.056	16.777	31.948	69.389
20	3.870	4.661	5.604	6.727	9.646	13.743	19.461	38.338	86.736
25	5.427	6.848	8.623	10.835	17.000	26.462	40.874	95.396	264.698
30	7.612	10.063	13.268	17.449	29.960	50.950	85.850	237.376	807.794
40	14.974	21.725	31.409	45.259	93.051	188.883	378.721	1469.772	7523.164
50	29.457	46.902	74.358	117.390	289.002	700.233	1670.704	9100.438	70064.923

APPENDIX TABLE II

Present Value of $1.00

$$V_o = \$1(1+i)^{-N}$$

n	.5%	1%	1.5%	2%	2.5%	3%	3.5%	4%	5%	6%
1	.995	.990	.985	.980	.976	.971	.966	.962	.952	.943
2	.990	.980	.971	.961	.952	.943	.934	.925	.907	.890
3	.985	.971	.956	.942	.929	.915	.902	.889	.864	.840
4	.980	.961	.942	.924	.906	.888	.871	.855	.823	.792
5	.975	.951	.928	.906	.884	.863	.842	.822	.784	.747
6	.971	.942	.915	.888	.862	.837	.814	.790	.746	.705
7	.966	.933	.901	.871	.841	.813	.786	.760	.711	.665
8	.961	.923	.888	.853	.821	.789	.759	.731	.677	.627
9	.956	.914	.875	.837	.801	.766	.734	.703	.645	.592
10	.951	.905	.862	.820	.781	.744	.709	.676	.614	.558
11	.947	.896	.849	.804	.762	.722	.685	.650	.585	.527
12	.942	.887	.836	.788	.744	.701	.662	.625	.557	.497
13	.937	.879	.824	.773	.725	.681	.639	.601	.530	.469
14	.933	.870	.812	.758	.708	.661	.618	.577	.505	.442
15	.928	.861	.800	.743	.690	.642	.597	.555	.481	.417
16	.923	.853	.788	.728	.674	.623	.577	.534	.458	.394
17	.919	.844	.776	.714	.657	.605	.557	.513	.436	.371
18	.914	.836	.765	.700	.641	.587	.538	.494	.416	.350
19	.910	.828	.754	.686	.626	.570	.520	.475	.396	.331
20	.905	.820	.742	.673	.610	.554	.503	.456	.377	.312
25	.883	.780	.689	.610	.539	.478	.423	.375	.295	.233
30	.861	.742	.640	.552	.477	.412	.356	.308	.231	.174
40	.819	.672	.551	.453	.372	.307	.253	.208	.142	.097
50	.779	.608	.457	.372	.291	.228	.179	.141	.087	.054

n	7%	8%	9%	10%	12%	14%	16%	20%	25%
1	.935	.926	.917	.909	.893	.877	.862	.833	.800
2	.873	.857	.842	.826	.797	.769	.743	.694	.640
3	.816	.794	.772	.751	.712	.675	.641	.579	.512
4	.763	.735	.708	.683	.636	.592	.552	.482	.410
5	.713	.681	.650	.621	.567	.519	.476	.402	.328
6	.666	.630	.596	.564	.507	.456	.410	.335	.262
7	.623	.583	.547	.513	.452	.400	.354	.279	.210
8	.582	.540	.502	.467	.404	.351	.305	.233	.168
9	.544	.500	.460	.424	.361	.308	.263	.194	.134
10	.508	.463	.422	.386	.322	.270	.227	.162	.107
11	.475	.429	.388	.350	.287	.237	.195	.135	.086
12	.444	.397	.356	.319	.257	.208	.168	.112	.069
13	.415	.368	.326	.290	.229	.182	.145	.093	.055
14	.388	.340	.299	.263	.205	.160	.125	.078	.044
15	.362	.315	.275	.239	.183	.140	.108	.065	.035
16	.339	.292	.252	.218	.163	.123	.093	.054	.028
17	.317	.270	.231	.198	.146	.108	.080	.045	.023
18	.296	.250	.212	.180	.130	.095	.069	.038	.018
19	.277	.232	.194	.164	.116	.083	.060	.031	.014
20	.258	.215	.178	.149	.104	.073	.051	.026	.012
25	.184	.146	.116	.092	.059	.038	.024	.010	.004
30	.131	.099	.075	.057	.033	.020	.012	.004	.001
40	.067	.046	.032	.022	.011	.005	.003	.001	.000
50	.034	.021	.013	.009	.004	.001	.001	.000	.000

APPENDIX TABLE III

Future Value of a Uniform Series

$$V_N = \$1\left[\frac{(1+i)^N-1}{i}\right] = USFV_{i,N}$$

n	.5%	1%	1.5%	2%	2.5%	3%	3.5%	4%	5%	6%
1	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2	2.005	2.010	2.015	2.020	2.025	2.030	2.035	2.040	2.050	2.060
3	3.015	3.030	3.045	3.060	3.076	3.091	3.106	3.122	3.152	3.184
4	4.030	4.060	4.091	4.122	4.153	4.184	4.214	4.246	4.310	4.375
5	5.050	5.101	5.152	5.204	5.256	5.309	5.362	5.416	5.526	5.637
6	6.076	6.152	6.230	6.308	6.388	6.468	6.550	6.633	6.802	6.975
7	7.106	7.214	7.323	7.434	7.547	7.662	7.779	7.898	8.142	8.394
8	8.141	8.286	8.432	8.583	8.736	8.892	9.052	9.214	9.549	9.897
9	9.182	9.369	9.559	9.755	9.955	10.159	10.368	10.583	11.027	11.491
10	10.228	10.462	10.703	10.950	11.203	11.464	11.731	12.006	12.578	13.181
11	11.279	11.567	11.863	12.169	12.483	12.808	13.142	13.486	14.207	14.972
12	12.336	12.683	13.041	13.412	13.796	14.192	14.602	15.026	15.917	16.870
13	13.397	13.809	14.237	14.680	15.140	15.618	16.113	16.627	17.713	18.882
14	14.464	14.947	15.450	15.974	16.519	17.086	17.677	18.292	19.599	21.051
15	15.537	16.097	16.682	17.293	17.932	18.599	19.296	20.024	21.579	23.276
16	16.614	17.258	17.932	18.639	19.380	20.157	20.971	21.825	23.657	25.673
17	17,697	18.430	19.201	20.012	20.865	21.762	22.705	23.698	25.840	28.213
18	18.786	19.615	20.489	21.412	22.386	23.414	24.500	25.645	28.132	30.906
19	19.880	20.811	21.797	22.841	23.946	25.117	26.357	27.671	30.539	33.760
20	20.979	22.019	23.124	24.297	25.545	26.870	28.280	29.778	33.066	36.786
25	26.559	28.243	30.063	32.030	34.158	36.459	38.950	41.646	47.727	54.865
30	32.280	34.785	37.539	40.568	43.903	47.575	51.663	56.085	66.439	79.058
40	44.159	48.886	54.268	60.402	67.403	75.401	84.550	95.026	120.800	154.762
50	56.645	64.463	73.683	84.579	97.484	112.797	130.998	152.667	209.348	290.336

n	7%	8%	9%	10%	12%	14%	16%	20%	25%
1	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2	2.070	2.080	2.090	2.100	2.120	2.140	2.160	2.200	2.250
3	3.215	3.246	3.278	3.310	3.374	3.440	3.506	3.640	3.813
4	4.440	4.506	4.573	4.641	4.779	4.921	5.066	5.368	5.766
5	5.751	5.867	5.985	6.105	6.353	6.610	6.877	7.442	8.207
6	7.153	7.336	7.523	7.716	8.115	8.536	8.977	9.930	11.259
7	8.654	8.923	9.200	9.487	10.089	10.730	11.414	12.916	15.073
8	10.260	10.637	11.028	11.436	12.300	11.233	14.240	16.499	19.842
9	11.978	12.488	13.021	13.579	14.776	16.085	17.518	20.799	25.802
10	13.816	14.487	15.193	15.937	17.549	19.337	21.321	25.959	33.253
11	15.784	16.645	17.560	18.531	20.655	23.045	25.733	32.150	42.566
12	17.888	18.977	20.141	21.384	24.133	27.271	30.850	39.581	54.208
13	20.141	21.495	22.953	24.523	28.029	32.089	36.786	48.497	68.760
14	22.550	24.215	26.019	27.975	32.393	37.581	43.672	59.196	86.949
15	25.129	27.152	29.361	31.772	37.280	43.842	51.660	72.035	109.687
16	27.888	20.324	33.003	35.950	42.753	50.980	60.925	87.442	138.109
17	30.840	33.750	36.974	40.545	48.884	59.118	71.673	105.931	173.636
18	33.999	37.450	41.301	45.599	55.750	68.394	84.141	128.117	218.045
19	37.379	41.446	46.018	51.159	63.440	78.969	98.603	154.740	273.556
20	40.995	45.762	51.160	57.275	72.052	91.025	115.380	186.688	342.945
25	63.249	73.106	84.701	98.347	133.334	181.871	249.214	471.981	1054.791
30	94.461	113.283	136.308	164.494	241.333	356.787	530.312	1181.882	3227.174
40	199.635	259.057	337.882	442.593	761.091	1342.025	2360.757	7343.858	30088.655
50	406.529	573.770	815.084	1163.909	2400.018	4994.521	10435.649	45497.191	280255.693

APPENDIX TABLE IV

Present Value of a Uniform Series

$$V_o = \$1\left[\frac{1-(1+i)^{-N}}{i}\right] = USPV_{i,N}$$

n	.5%	1%	1.5%	2%	2.5%	3%	3.5%	4%	5%	6%
1	.995	.990	.985	.980	.976	.971	.966	.962	.952	.943
2	1.985	1.970	1.956	1.942	1.927	1.913	1.900	1.886	1.859	1.833
3	2.970	2.941	2.912	2.884	2.856	2.829	2.802	2.775	2.723	2.673
4	3.950	3.902	3.854	3.808	3.762	3.717	3.673	3.630	3.546	3.465
5	4.926	4.853	4.783	4.713	4.646	4.580	4.515	4.452	4.329	4.212
6	5.896	5.795	5.697	5.601	5.508	5.417	5.329	5.242	5.076	4.917
7	6.862	6.728	6.598	6.472	6.349	6.230	6.115	6.002	5.786	5.582
8	7.823	7.652	7.486	7.325	7.170	7.020	6.874	6.733	6.463	6.210
9	8.779	8.566	8.361	8.162	7.971	7.786	7.608	7.435	7.108	6.802
10	9.730	9.471	9.222	8.893	8.752	8.530	8.317	8.111	7.722	7.360
11	10.677	10.368	10.071	9.787	9.514	9.253	9.002	8.760	8.306	7.887
12	11.619	11.255	10.908	10.575	10.258	9.954	9.663	9.385	8.863	8.384
13	12.556	12.134	11.732	11.348	10.983	10.635	10.303	9.986	9.394	8.853
14	13.489	13.004	12.543	12.106	11.691	11.296	10.921	10.563	9.899	9.295
15	14.417	13.865	13.343	12.849	12.381	11.938	11.517	11.118	10.380	9.712
16	15.340	14.718	14.131	13.578	13.055	12.561	12.094	11.652	10.838	10.106
17	16.259	15.562	14.908	14.292	13.712	13.166	12.651	12.166	11.274	10.477
18	17.173	16.398	15.673	14.992	14.353	13.754	13.190	12.659	11.690	10.828
19	18.082	17.226	16.426	15.678	14.979	14.324	13.710	13.134	12.085	11.158
20	18.987	18.046	17.169	16.351	15.589	14.877	14.212	13.590	12.462	11.470
25	23.446	22.023	20.720	19.523	18.424	17.413	16.482	15.622	14.094	12.783
30	27.794	25.808	24.016	22.397	20.930	19.600	18.392	17.292	15.373	13.765
40	36.172	32.838	29.916	27.355	25.103	23.115	21.355	19.793	17.159	15.046
50	44.143	39.196	35.000	31.424	28.362	25.730	23.456	21.482	18.256	15.762

n	7%	8%	9%	10%	12%	14%	16%	20%	25%
1	.935	.926	.917	.909	.893	.877	.862	.833	.800
2	1.808	1.783	1.759	1.736	1.690	1.647	1.605	1.528	1.440
3	2.624	2.577	2.531	2.487	2.402	2.322	2.246	2.106	1.952
4	3.387	3.312	3.240	3.170	3.037	2.914	2.798	2.589	2.362
5	4.100	3.993	3.890	3.791	3.605	3.433	3.274	2.991	2.689
6	4.767	4.623	4.486	4.355	4.111	3.889	3.685	3.326	2.951
7	5.389	5.206	5.033	4.868	4.564	4.288	4.039	3.605	3.161
8	6.971	5.747	5.535	5.335	4.968	4.639	4.344	3.837	3.329
9	6.515	6.247	5.995	5.759	5.328	4.946	4.607	4.031	3.463
10	7.024	6.710	6.418	6.145	5.650	5.216	4.833	4.192	3.571
11	7.499	7.139	6.805	6.495	5.938	5.453	5.029	4.327	3.656
12	7.943	7.536	7.161	6.814	6.194	5.660	5.197	4.439	3.725
13	8.358	7.904	7.487	7.103	6.424	5.842	5.342	4.533	3.780
14	8.745	8.244	7.786	7.367	6.628	6.002	5.468	4.611	3.824
15	9.108	8.559	8.060	7.606	6.811	6.142	5.575	4.675	3.859
16	9.447	8.851	8.313	7.824	6.974	6.265	5.668	4.730	3.887
17	9.763	9.122	8.544	8.022	7.120	6.373	5.749	4.775	3.910
18	10.059	9.372	8.756	8.201	7.250	6.467	5.818	4.812	3.928
19	10.336	9.604	8.950	8.365	7.366	6.550	5.877	4.843	3.942
20	10.594	9.818	9.129	8.514	7.469	6.623	5.929	4.870	3.954
25	11.654	10,675	9.823	9.077	7.843	6.873	6.097	4.948	3.985
30	12.409	11.258	10.274	9.427	8.055	7.003	6.177	4.979	3.995
40	13.332	11.925	10.757	9.779	8.244	7.105	6.233	4.997	3.999
50	13.801	12.233	10.962	9.915	8.304	7.133	6.246	4.999	4.000

CAPITAL BUDGETING
UNIT VII

INFORMATION SHEET

I. Terms and definitions

  A. Capital budgeting--Process involving current investments in which cash flows will be received sometime in the future

  (NOTE: Capital budgeting may include determination of investment proposals, estimation of cash flows for those proposals, evaluation of cash flows, and selection of projects based on predetermined criteria.)

  B. Capitalization--Process of determining present value of a series of payments to be received indefinitely

  C. Annuity--Series of fixed or periodic payments

  D. Discounting--Mathematical procedure to determine present values of amounts to be received in the future

  E. Compounding--Mathematical procedure to determine future values of an amount invested at present

  F. Opportunity costs--Value of alternative investment opportunities that resources used in current production would have produced

  Example: Opportunity costs of capital invested in various enterprises is the interest that capital could have earned if placed in a savings account. Thus, if an investment alternative does not return as much as a savings account, it does not pay to invest in that alternative compared to investing in a savings account

  G. Payback period--Time taken for the business to recover the initial investment out of earnings expected to arise because of the investment

II. Uses of capital budgeting

  A. Allows individuals to maximize their economic goals

  B. Allows individuals to make better decisions in the economic unit

  C. Gives an idea of the costs associated with a particular enterprise

  D. Maximizes returns on a given set of investment alternatives

III. Steps in evaluating capital expenditure proposals

  A. Identify potentially profitable capital expenditure alternatives

  B. Determine profit potential for capital expenditure alternatives

  Examples: Determine capital requirements for each alternative; determine earnings resulting from investment alternatives; determine economic worth of investment alternatives

INFORMATION SHEET

C. Act on analysis performed

D. Evaluate actions taken

E. Determine steps for improving future expenditure selections

(NOTE: If a poor analysis is performed and actions are taken on the basis of that analysis, the individual, in most cases, will have to accept the results of those actions for some period of time.)

IV. Characteristics of net cash flows

A. All inflows and outflows relating to the investment alternative are included

(NOTE: These may include operating expenses and income taxes.)

B. Farming business net cash flow should be used for analysis purposes rather than accounting net figures

(NOTE: Capital budgeting requires that the individual use some method of measuring future returns.)

C. Depreciation and inventory charges are not included

(NOTE: Depreciation expenses do not create inflow at the time incurred; however, depreciation is deductible from farm income in determining taxable income. Depreciation reduces taxable income. It reduces taxes and net cash outflow that would be incurred in making tax payments.)

D. Cash flow income tax charges should include the cooperator's deduction of investment tax credit

V. Characteristics of future value of a present sum (Assignment Sheets #1 and #2)

A. Is used to calculate what an amount of capital currently held (present sum) would be worth at some time in the future

Examples: You want to know what the $5,000 you have in the savings and loan will be worth in 1, 5, or 10 years, at the current rate of interest you are receiving. Future value of a present sum would be used in the calculation;

You want to know how much interest, excluding finder's fees, loan origination fees, etc., you are paying on a $10,000 operating loan for 9 months. Future value of a present sum would be used in the calculation

B. May be used to calculate interest which would be paid on an amount borrowed

(NOTE: The compounding principle is extensively used. Formulas and problem examples appear in the assignment sheets.)

INFORMATION SHEET

VI. Use of present value of a future sum--Is used to a great extent by individuals who are considering making an investment in some investment opportunity in which the future amount to be received is known, with a certain asking price to participate in the investment being asked for today (Assignment Sheet #3)

Example: You want to invest in some corporate bonds which are payable in 1989. You know they will be worth $1,000 in 1989, but the asking price today is $700. Is this a good investment? The main question is "Would you invest $700 today to receive $1,000 in 1989?"

(NOTE: An individual may know that a certain amount of captial will be received at a future date. If the currently applicable discount rate [interest rate] is known and the number of conversion periods [may be years, quarters, weeks, etc.] also are known, it is possible to determine what the future sum is worth today. Formulas and problems appear in the assignment sheets. Discounting is extensively used in the process.)

VII. Characteristics of present value of a uniform and non-uniform series of payments (Assignment Sheet #4)

A. Are used mainly when an estimate of a series of cash flows, which may be yearly net income from the investment, is known, is discounted, and allows the individual to know the size of the discount for the delayed receipt of payment

B. Indicate earnings lost by not investing payments in an alternative investment yielding the same returns as the investment

Examples: You estimate over the next several years you will receive the following cash flows from a swine operation: $10,000, $12,000, $14,000, $16,000, and $18,000, respectively. What is the present value of these cash flows, which will tell you your opportunity costs for not investing your capital in alternative investments yielding the same interest rate?

(NOTE: Finding the present value of a series of future payments is one of the basic decision-making criteria used in capital budgeting. Present value of a series involves essentially the same procedure as calculating the present value of one future payment; however, the procedure is used to discount more than one year's estimated cash flow and these are added to give a value. Formulas and problems will appear in the assignment sheets.)

VIII. Use of future value of a uniform series and non-uniform series of payments--

Used extensively by individuals who will be investing amounts over a period of years and determining what those investments' total worth will be at a future date (Assignment Sheet #5)

Examples: You are investing different amounts of capital over a number of years. What will those investments be worth in 25 years at 10% interest?;

You are receiving royalty payments over a number of years. Assuming you invest what you receive, what are those payments worth over a number of years?

INFORMATION SHEET

IX. Techniques used to evaluate investment alternatives (Assignment Sheet #12)

   A. Net present value (Assignment Sheet #6)

   B. Simple rate of return (Assignment Sheet #7)

   C. Payback period (Assignment Sheet #8)

   D. Amoritization (Assignment Sheets #9, #10, and #11)

   E. Capitalization

X. Characteristics of net present value in evaluating an investment proposal (Assignment Sheet #6)

   A. Is useful in determining if an investment will or will not return the desired rate of return

   B. Involves determining net present value of net cash inflows or benefits and subtracting the present value of net cash outflows

   C. Accepts investment proposal if the final figure is positive; rejects proposal if the final figure is negative

   D. Indicates if an investment proposal is desirable at a selected percentage rate of return

CAPITAL BUDGETING
UNIT VII

ASSIGNMENT SHEET #1--CALCULATE THE FUTURE VALUE OF A PRESENT SUM WITH ONE-YEAR CONVERSION PERIODS

NAME____________________________ SCORE__________________

The formula for determining future value of a present value is:

PRINCIPAL x FUTURE VALUE OF $1.00 TABLE VALUE

(NOTE: Use Table 1, Future Value of $1.00 on the following pages.)

Example: What will $1,000 in a savings account paying 8% interest be worth in 1 year? 5 years? 25 years? Assume interest is compounded annually

Look at Table 1. The columns on the top of the page indicate the percentage rates, the column (N) on the far left-hand side of the page indicates the number of years or conversion periods in question. Find the number of conversion periods, which in this case is the number of years, for one year. Look to 1 and go to the right until finding the interest rate, in this case 8%, the value is 1.080. Now multiply the principal, $1,000, by the table value

$1,000 x 1.080 = $1,080.00

$1,000 at 8% interest would be worth $1,080.00 at the end of 1 year

Repeat the procedure for 5 and 25-year periods

$1,000 x 1.469 = $1,469.00

$1,000 x 6.848 = $6,848.00

$1,000 would be worth $1,469.00 in 5 years and $6,848.00 in 25 years

PROBLEM:

At 12 percent interest compounded annually, what would $5,000.00 be worth in

a. Five years?________________________________

b. Ten years?________________________________

c. Thirty years?______________________________

ASSIGNMENT SHEET #1

APPENDIX TABLE I

Future Value of $1.00

$V_N = \$1(1+i)^N$

n	.5%	1%	1.5%	2%	2.5%	3%	3.5%	4%	5%	6%
1	1.005	1.010	1.015	1.020	1.025	1.030	1.035	1.040	1.050	1.060
2	1.010	1.020	1.030	1.040	1.051	1.061	1.071	1.082	1.103	1.124
3	1.015	1.030	1.046	1.061	1.077	1.093	1.109	1.125	1.158	1.191
4	1.020	1.041	1.061	1.082	1.104	1.126	1.148	1.170	1.216	1.262
5	1.025	1.051	1.077	1.104	1.131	1.159	1.188	1.217	1.276	1.338
6	1.030	1.062	1.093	1.126	1.160	1.194	1.229	1.265	1.340	1.419
7	1.036	1.072	1.110	1.149	1.189	1.230	1.272	1.316	1.407	1.504
8	1.041	1.083	1.126	1.172	1.218	1.267	1.317	1.369	1.477	1.594
9	1.046	1.094	1.143	1.195	1.249	1.305	1.363	1.423	1.551	1.690
10	1.051	1.105	1.161	1.219	1.280	1.344	1.411	1.480	1.629	1.791
11	1.056	1.116	1.178	1.243	1.312	1.384	1.460	1.539	1.710	1.898
12	1.062	1.127	1.196	1.268	1.345	1.426	1.511	1.601	1.796	2.012
13	1.067	1.138	1.214	1.294	1.379	1.469	1.564	1.665	1.886	2.133
14	1.072	1.149	1.232	1.319	1.413	1.513	1.619	1.732	1.980	2.261
15	1.078	1.161	1.250	1.346	1.448	1.558	1.675	1.801	2.079	2.397
16	1.083	1.173	1.269	1.373	1.485	1.605	1.734	1.873	2.183	2.540
17	1.088	1.184	1.288	1.400	1.522	1.653	1.795	1.948	2.292	2.693
18	1.094	1.196	1.307	1.428	1.560	1.702	1.857	2.026	2.407	2.854
19	1.099	1.208	1.327	1.457	1.599	1.754	1.923	2.107	2.527	3.026
20	1.105	1.220	1.347	1.486	1.639	1.806	1.990	2.191	2.653	3.207
25	1.133	1.282	1.451	1.641	1.854	2.094	2.363	2.666	3.386	4.292
30	1.161	1.348	1.563	1.811	2.098	2.427	2.807	3.243	4.322	5.743
40	1.221	1.489	1.814	2.208	2.685	3.262	3.959	4.801	7.040	10.286
50	1.283	1.645	2.105	2.692	3.437	4.384	5.585	7.107	11.467	18.420

n	7%	8%	9%	10%	12%	14%	16%	20%	25%
1	1.070	1.080	1.090	1.100	1.120	1.140	1.160	1.200	1.250
2	1.145	1.166	1.188	1.210	1.254	1.300	1.346	1.440	1.562
3	1.225	1.260	1.295	1.331	1.405	1.482	1.561	1.728	1.953
4	1.311	1.360	1.412	1.464	1.574	1.689	1.811	2.074	2.441
5	1.403	1.469	1.539	1.611	1.762	1.925	2.100	2.488	3.052
6	1.501	1.587	1.677	1.772	1.974	2.195	2.436	2.986	3.815
7	1.606	1.714	1.828	1.949	2.211	2.502	2.826	3.583	4.768
8	1.718	1.851	1.993	2.144	2.476	2.853	3.278	4.300	5.960
9	1.838	1.999	2.172	2.358	2.773	3.252	3.803	5.160	7.451
10	1.967	2.159	2.367	2.594	3.106	3.707	4.411	6.192	9.313
11	2.105	2.332	2.580	2.853	3.479	4.226	5.117	7.430	11.462
12	2.252	2.518	2.813	3.138	3.896	4.818	5.936	8.916	14.552
13	2.410	2.720	3.066	3.452	4.363	5.492	6.886	10.699	18.190
14	2.579	2.937	3.342	3.797	4.887	6.261	7.988	12.839	22.737
15	2.759	3.172	3.642	4.177	5.474	7.138	9.266	15.407	28.421
16	2.952	3.426	3.970	4.595	6.130	8.137	10.748	18.488	35.527
17	3.159	3.700	4.328	5.054	6.866	9.276	12.468	22.186	44.409
18	3.380	3.996	4.717	5.560	7.690	10.575	14.463	26.623	55.511
19	3.617	4.316	5.142	6.116	8.613	12.056	16.777	31.948	69.389
20	3.870	4.661	5.604	6.727	9.646	13.743	19.461	38.338	86.736
25	5.427	6.848	8.623	10.835	17.000	26.462	40.874	95.396	264.698
30	7.612	10.063	13.268	17.449	29.960	50.950	85.850	237.376	807.794
40	14.974	21.725	31.409	45.259	93.051	188.883	378.721	1469.772	7523.164
50	29.457	46.902	74.358	117.390	289.002	700.233	1670.704	9100.438	70064.923

CAPITAL BUDGETING
UNIT VII

ASSIGNMENT SHEET #2--CALCULATE THE FUTURE VALUE OF A PRESENT SUM

NAME____________________ SCORE__________

Opportunity costs of money usually are reflected as interest rates for using that money; interest rates also serve as the individual's time preference for money and the pricing mechanisms which control flows into and out of financial intermediaries. Interest rates may be expressed as a yearly rate; compounding, on the other hand, may be done, daily, weekly, monthly, quarterly, biannually, or annually. These are known as conversion periods.

Example: 5 1/2% compounded quarterly

When interest rates must be converted from a yearly rate to a rate per conversion period, the formula for future value of a present sum is slightly different than for interest compounded annually and is depicted below:

$$FV = P \times \left[1 + \left(\frac{i}{NCP}\right)\right]^{NCP \times NY}$$

FV = Future value

P = Principal

i = Interest rate

NCP = Number of conversion periods per year

NY = Number of years

Examples: What will a $1,000 savings account be worth in one year if the savings institution is offering a savings account paying 5.25% interest compounded quarterly? The calculation is shown below:

$$FV = \$1,000 \times \left[1 + \left(\frac{.0525}{4}\right)\right]^{(4) \times (1)}$$

$\$1,000 \times (1.0131)^4$

$1,000 x (1.0534)

$1,053.40

PROBLEM:

What would $6,000 be worth in 5 years at 12% interest compounded quarterly?

CAPITAL BUDGETING
UNIT VII

ASSIGNMENT SHEET #3--CALCULATE THE PRESENT VALUE OF A FUTURE SUM

NAME________________________________ SCORE________________

The formula for calculating present value of the future sum is:

ANNUITY x PRESENT VALUE OF $1.00 TABLE VALUE

(NOTE: Use Table 2, Present Value of $1.00, on the following page.)

Examples: If investing in some bonds, it is known that in 20 years a $1,000 return (payback when the bonds mature) will be received. The discount rate (interest rate) is assumed to be 10%. What would you be willing to pay today to receive the $1,000 in 20 years?

Look at Table 2. Find the table with the discount rate of 10% and the number of conversion periods (20) in question. Scanning the table, look on the top row and find 10%. Look down the far left-hand side at the table and find 20 (number of conversion periods), the value should be .149. Substitute this figure in the formula

PV = $1,000 x .149

= $149.00

We would not pay over $149.00 for the right to receive $1,000 in 20 years at 10% interest

(NOTE: $149.00 compounded annually at 10% over a period of 20 years should be equal to $1,000. This process discounting is the inverse of compounding. There may be some rounding error.)

PROBLEM:

What would you be willing to pay to receive $1,000 in 3 years assuming the discount rate to be 5%?

ASSIGNMENT SHEET #3

APPENDIX TABLE II

Present Value of $1.00

$V_o = \$1(1+i)^{-N}$

n	.5%	1%	1.5%	2%	2.5%	3%	3.5%	4%	5%	6%
1	.995	.990	.985	.980	.976	.971	.966	.962	.952	.943
2	.990	.980	.971	.961	.952	.943	.934	.925	.907	.890
3	.985	.971	.956	.942	.929	.915	.902	.889	.864	.840
4	.980	.961	.942	.924	.906	.888	.871	.855	.823	.792
5	.975	.951	.928	.906	.884	.863	.842	.822	.784	.747
6	.971	.942	.915	.888	.862	.837	.814	.790	.746	.705
7	.966	.933	.901	.871	.841	.813	.786	.760	.711	.665
8	.961	.923	.888	.853	.821	.789	.759	.731	.677	.627
9	.956	.914	.875	.837	.801	.766	.734	.703	.645	.592
10	.951	.905	.862	.820	.781	.744	.709	.676	.614	.558
11	.947	.896	.849	.804	.762	.722	.685	.650	.585	.527
12	.942	.887	.836	.788	.744	.701	.662	.625	.557	.497
13	.937	.879	.824	.773	.725	.681	.639	.601	.530	.469
14	.933	.870	.812	.758	.708	.661	.618	.577	.505	.442
15	.928	.861	.800	.743	.690	.642	.597	.555	.481	.417
16	.923	.853	.788	.728	.674	.623	.577	.534	.458	.394
17	.919	.844	.776	.714	.657	.605	.557	.513	.436	.371
18	.914	.836	.765	.700	.641	.587	.538	.494	.416	.350
19	.910	.828	.754	.686	.626	.570	.520	.475	.396	.331
20	.905	.820	.742	.673	.610	.554	.503	.456	.377	.312
25	.883	.780	.689	.610	.539	.478	.423	.375	.295	.233
30	.861	.742	.640	.552	.477	.412	.356	.308	.231	.174
40	.819	.672	.551	.453	.372	.307	.253	.208	.142	.097
50	.779	.608	.457	.372	.291	.228	.179	.141	.087	.054

n	7%	8%	9%	10%	12%	14%	16%	20%	25%
1	.935	.926	.917	.909	.893	.877	.862	.833	.800
2	.873	.857	.842	.826	.797	.769	.743	.694	.640
3	.816	.794	.772	.751	.712	.675	.641	.579	.512
4	.763	.735	.708	.683	.636	.592	.552	.482	.410
5	.713	.681	.650	.621	.567	.519	.476	.402	.328
6	.666	.630	.596	.564	.507	.456	.410	.335	.262
7	.623	.583	.547	.513	.452	.400	.354	.279	.210
8	.582	.540	.502	.467	.404	.351	.305	.233	.168
9	.544	.500	.460	.424	.361	.308	.263	.194	.134
10	.508	.463	.422	.386	.322	.270	.227	.162	.107
11	.475	.429	.388	.350	.287	.237	.195	.135	.086
12	.444	.397	.356	.319	.257	.208	.168	.112	.069
13	.415	.368	.326	.290	.229	.182	.145	.093	.055
14	.388	.340	.299	.263	.205	.160	.125	.078	.044
15	.362	.315	.275	.239	.183	.140	.108	.065	.035
16	.339	.292	.252	.218	.163	.123	.093	.054	.028
17	.317	.270	.231	.198	.146	.108	.080	.045	.023
18	.296	.250	.212	.180	.130	.095	.069	.038	.018
19	.277	.232	.194	.164	.116	.083	.060	.031	.014
20	.258	.215	.178	.149	.104	.073	.051	.026	.012
25	.184	.146	.116	.092	.059	.038	.024	.010	.004
30	.131	.099	.075	.057	.033	.020	.012	.004	.001
40	.067	.046	.032	.022	.011	.005	.003	.001	.000
50	.034	.021	.013	.009	.004	.001	.001	.000	.000

CAPITAL BUDGETING
UNIT VII

ASSIGNMENT SHEET #4--CALCULATE PRESENT VALUE IN A UNIFORM AND NON-UNIFORM SERIES OF PAYMENTS

NAME ______________________ SCORE ______________

The formula for calculating present value of a uniform series of payments is:

A x Present Value of a Uniform Series, Table 4 Value

PV = Present value

A = Annuity payments

Examples: Assume you are to receive $1,000 for the next 5 years from a swine operation. If the discount rate is 8% what would the present value be?

Using Table 4, Present Value of a Uniform Series, on the following pages, search the left-hand margin to find the number of conversion periods, in this case 5. Move to the right until directly underneath 8%. This will be the conversion factor and should be 3.993.

PV = $1,000 x 3.993

PV = $3,993.00

(NOTE: Remember you would receive $5,000 but would be unwilling to invest more than $3,993.00 to receive that $5,000 over a 5-year period.)

The equation for calculating present value of a non-uniform series of payments is somewhat more difficult. It is:

$$PV = \frac{P_1}{(1+i)^1} + \frac{P_2}{(1+i)^2} + \frac{P_3}{(1+i)^3} + \ldots\ldots + \frac{P_N}{(1+i)^N}$$

PV = Present value

P = Principal

I = Interest

P_1 = Principal first year

N = Year

ASSIGNMENT SHEET #4

This may be simplified by substituting values in Table 2, Present Value of $1.00 on the following pages, for $\frac{P_N}{(1+i)^N}$

Example: A livestock investment returns the following cash flows:

YEAR	NET CASH FLOW
1	$2,000
2	3,000
3	4,000
4	5,000
5	6,000

A discount rate of 10% is assumed. What would the present value of the $20,000 be?

(NOTE: Use the table values.)

PV = 2,000 (.909) + 3,000 (.826) + 4,000 (.751) + 5,000 (.683) + 6,000 (.621)

PV = $14,441.00

(NOTE: You would be unwilling to invest more than $14,441.00 to receive $20,000 over a 5-year period.)

The present value of the net cash flow for the 5-year period is $14,441.00. Using a zero discount rate, the present value is $20,000. There is a difference of $5,559.00. This is the discount for delayed receipt of payments. Stated differently, it is the opportunity cost of the cooperator by not investing the payments in alternative investments yielding 10%

(NOTE: Finding present value of a series of payments is one of the basic decision-making criteria used in capital budgeting.)

PROBLEM:

a. Assume you are to receive $2,000 annually for the next 10 years from an oil lease. If the interest rate is 9%, what would the present value be?____________________

(NOTE: Remember to use the Table 4 values.)

ASSIGNMENT SHEET #4

b. Assume you are receiving the following net cash flows from a poultry investment over the next 5 years. What would the present value of the investment be? Interest is 7%____

(NOTE: Remember to use Table 2 values.)

YEAR	NET CASH FLOW
1	$3,500
2	4,500
3	5,500
4	6,500
5	7,500

ASSIGNMENT SHEET #4

APPENDIX TABLE II

Present Value of $1.00

$V_o = \$1(1+i)^{-N}$

n	.5%	1%	1.5%	2%	2.5%	3%	3.5%	4%	5%	6%
1	.995	.990	.985	.980	.976	.971	.966	.962	.952	.943
2	.990	.980	.971	.961	.952	.943	.934	.925	.907	.890
3	.985	.971	.956	.942	.929	.915	.902	.889	.864	.840
4	.980	.961	.942	.924	.906	.888	.871	.855	.823	.792
5	.975	.951	.928	.906	.884	.863	.842	.822	.784	.747
6	.971	.942	.915	.888	.862	.837	.814	.790	.746	.705
7	.966	.933	.901	.871	.841	.813	.786	.760	.711	.665
8	.961	.923	.888	.853	.821	.789	.759	.731	.677	.627
9	.956	.914	.875	.837	.801	.766	.734	.703	.645	.592
10	.951	.905	.862	.820	.781	.744	.709	.676	.614	.558
11	.947	.896	.849	.804	.762	.722	.685	.650	.585	.527
12	.942	.887	.836	.788	.744	.701	.662	.625	.557	.497
13	.937	.879	.824	.773	.725	.681	.639	.601	.530	.469
14	.933	.870	.812	.758	.708	.661	.618	.577	.505	.442
15	.928	.861	.800	.743	.690	.642	.597	.555	.481	.417
16	.923	.853	.788	.728	.674	.623	.577	.534	.458	.394
17	.919	.844	.776	.714	.657	.605	.557	.513	.436	.371
18	.914	.836	.765	.700	.641	.587	.538	.494	.416	.350
19	.910	.828	.754	.686	.626	.570	.520	.475	.396	.331
20	.905	.820	.742	.673	.610	.554	.503	.456	.377	.312
25	.883	.780	.689	.610	.539	.478	.423	.375	.295	.233
30	.861	.742	.640	.552	.477	.412	.356	.308	.231	.174
40	.819	.672	.551	.453	.372	.307	.253	.208	.142	.097
50	.779	.608	.457	.372	.291	.228	.179	.141	.087	.054

n	7%	8%	9%	10%	12%	14%	16%	20%	25%
1	.935	.926	.917	.909	.893	.877	.862	.833	.800
2	.873	.857	.842	.826	.797	.769	.743	.694	.640
3	.816	.794	.772	.751	.712	.675	.641	.579	.512
4	.763	.735	.708	.683	.636	.592	.552	.482	.410
5	.713	.681	.650	.621	.567	.519	.476	.402	.328
6	.666	.630	.596	.564	.507	.456	.410	.335	.262
7	.623	.583	.547	.513	.452	.400	.354	.279	.210
8	.582	.540	.502	.467	.404	.351	.305	.233	.168
9	.544	.500	.460	.424	.361	.308	.263	.194	.134
10	.508	.463	.422	.386	.322	.270	.227	.162	.107
11	.475	.429	.388	.350	.287	.237	.195	.135	.086
12	.444	.397	.356	.319	.257	.208	.168	.112	.069
13	.415	.368	.326	.290	.229	.182	.145	.093	.055
14	.388	.340	.299	.263	.205	.160	.125	.078	.044
15	.362	.315	.275	.239	.183	.140	.108	.065	.035
16	.339	.292	.252	.218	.163	.123	.093	.054	.028
17	.317	.270	.231	.198	.146	.108	.080	.045	.023
18	.296	.250	.212	.180	.130	.095	.069	.038	.018
19	.277	.232	.194	.164	.116	.083	.060	.031	.014
20	.258	.215	.178	.149	.104	.073	.051	.026	.012
25	.184	.146	.116	.092	.059	.038	.024	.010	.004
30	.131	.099	.075	.057	.033	.020	.012	.004	.001
40	.067	.046	.032	.022	.011	.005	.003	.001	.000
50	.034	.021	.013	.009	.004	.001	.001	.000	.000

ASSIGNMENT SHEET #4

APPENDIX TABLE IV

Present Value of a Uniform Series

$$V_o = \$1\left[\frac{1-(1+i)^{-N}}{i}\right] = USPV_{i,N}$$

n	.5%	1%	1.5%	2%	2.5%	3%	3.5%	4%	5%	6%
1	.995	.990	.985	.980	.976	.971	.966	.962	.952	.943
2	1.985	1.970	1.956	1.942	1.927	1.913	1.900	1.886	1.859	1.833
3	2.970	2.941	2.912	2.884	2.856	2.829	2.802	2.775	2.723	2.673
4	3.950	3.902	3.854	3.808	3.762	3.717	3.673	3.630	3.546	3.465
5	4.926	4.853	4.783	4.713	4.646	4.580	4.515	4.452	4.329	4.212
6	5.896	5.795	5.697	5.601	5.508	5.417	5.329	5.242	5.076	4.917
7	6.862	6.728	6.598	6.472	6.349	6.230	6.115	6.002	5.786	5.582
8	7.823	7.652	7.486	7.325	7.170	7.020	6.874	6.733	6.463	6.210
9	8.779	8.566	8.361	8.162	7.971	7.786	7.608	7.435	7.108	6.802
10	9.730	9.471	9.222	8.893	8.752	8.530	8.317	8.111	7.722	7.360
11	10.677	10.368	10.071	9.787	9.514	9.253	9.002	8.760	8.306	7.887
12	11.619	11.255	10.908	10.575	10.258	9.954	9.663	9.385	8.863	8.384
13	12.556	12.134	11.732	11.348	10.983	10.635	10.303	9.986	9.394	8.853
14	13.489	13.004	12.543	12.106	11.691	11.296	10.921	10.563	9.899	9.295
15	14.417	13.865	13.343	12.849	12.381	11.938	11.517	11.118	10.380	9.712
16	15.340	14.718	14.131	13.578	13.055	12.561	12.094	11.652	10.838	10.106
17	16.259	15.562	14.908	14.292	13.712	13.166	12.651	12.166	11.274	10.477
18	17.173	16.398	15.673	14.992	14.353	13.754	13.190	12.659	11.690	10.828
19	18.082	17.226	16.426	15.678	14.979	14.324	13.710	13.134	12.085	11.158
20	18.987	18.046	17.169	16.351	15.589	14.877	14.212	13.590	12.462	11.470
25	23.446	22.023	20.720	19.523	18.424	17.413	16.482	15.622	14.094	12.783
30	27.794	25.808	24.016	22.397	20.930	19.600	18.392	17.292	15.373	13.765
40	36.172	32.838	29.916	27.355	25.103	23.115	21.355	19.793	17.159	15.046
50	44.143	39.196	35.000	31.424	28.362	25.730	23.456	21.482	18.256	15.762

n	7%	8%	9%	10%	12%	14%	16%	20%	25%
1	.935	.926	.917	.909	.893	.877	.862	.833	.800
2	1.808	1.783	1.759	1.736	1.690	1.647	1.605	1.528	1.440
3	2.624	2.577	2.531	2.487	2.402	2.322	2.246	2.106	1.952
4	3.387	3.312	3.240	3.170	3.037	2.914	2.798	2.589	2.362
5	4.100	3.993	3.890	3.791	3.605	3.433	3.274	2.991	2.689
6	4.767	4.623	4.486	4.355	4.111	3.889	3.685	3.326	2.951
7	5.389	5.206	5.033	4.868	4.564	4.288	4.039	3.605	3.161
8	6.971	5.747	5.535	5.335	4.968	4.639	4.344	3.837	3.329
9	6.515	6.247	5.995	5.759	5.328	4.946	4.607	4.031	3.463
10	7.024	6.710	6.418	6.145	5.650	5.216	4.833	4.192	3.571
11	7.499	7.139	6.805	6.495	5.938	5.453	5.029	4.327	3.656
12	7.943	7.536	7.161	6.814	6.194	5.660	5.197	4.439	3.725
13	8.358	7.904	7.487	7.103	6.424	5.842	5.342	4.533	3.780
14	8.745	8.244	7.786	7.367	6.628	6.002	5.468	4.611	3.824
15	9.108	8.559	8.060	7.606	6.811	6.142	5.575	4.675	3.859
16	9.447	8.851	8.313	7.824	6.974	6.265	5.668	4.730	3.887
17	9.763	9.122	8.544	8.022	7.120	6.373	5.749	4.775	3.910
18	10.059	9.372	8.756	8.201	7.250	6.467	5.818	4.812	3.928
19	10.336	9.604	8.950	8.365	7.366	6.550	5.877	4.843	3.942
20	10.594	9.818	9.129	8.514	7.469	6.623	5.929	4.870	3.954
25	11.654	10,675	9.823	9.077	7.843	6.873	6.097	4.948	3.985
30	12.409	11.258	10.274	9.427	8.055	7.003	6.177	4.979	3.995
40	13.332	11.925	10.757	9.779	8.244	7.105	6.233	4.997	3.999
50	13.801	12.233	10.962	9.915	8.304	7.133	6.246	4.999	4.000

CAPITAL BUDGETING
UNIT VII

ASSIGNMENT SHEET #5--CALCULATE FUTURE VALUE IN A UNIFORM AND NON-UNIFORM SERIES OF PAYMENTS

NAME______________________________ SCORE__________________

The formula for calculating future value of a uniform series of payments is:

PRINCIPAL x FUTURE VALUE OF A UNIFORM SERIES
TABLE 3 VALUE

Example: Assume you signed a royalty lease for a 160 acre tract and the company that signed you pooled the section and drilled for gas. A well was made and you're pretty happy because you've just found out your royalty payments will amount to $20,000 annually, after taxes. You also farm on this land and decide to save this $20,000 per year for your retirement. What would $20,000 invested anually be worth at 9% interest after a period of 20 years?

Look on Table 3 on the following page until finding 9%. Scan the left-hand margin to find the number of conversion periods (20). The table value should be 51.160

$20,000 x 51.160 = $1,023,200.00

In 20 years, you would have $1,023,200.00 saved and you would be a millionaire by doing nothing but saving

(NOTE: This does not take into account what taxes would do to your interest received.)

The formula for calculating future value of a non-uniform series of payments is somewhat more difficult to calculate. The formula is:

$$P_0 (1 + i)^{NCP} + P_1 (1 + i)^{NCP-1} = P_2 (1 + i)^{NCP-2} + \ldots P_N$$

FV = Future value

i = Interest rate

NCP = Number of conversion periods

P = Payment

ASSIGNMENT SHEET #5

Examples: The equation looks difficult but is really quite simple.

Assume you are saving for retirement. You speculate you can save the following amounts:

YEAR	AMOUNT
1	$2,000
2	3,000
3	4,000
4	5,000
5	6,000

What would those amounts be worth in 5 years at 10% interest?

(NOTE: Substitute Table 1, Future value of $1.00 values, in the equation for simplification.)

FV = 2,000 (1.464) + 3,000 (1.331) + 4,000 (1,210) + 5,000 (1.100) + 6,000 = $23,261.00

The series of payments is worth $23,261.00 at the end of 5 years. Total interest paid is $3,261.00 ($23,261.00 - $20,000). There is no compounding in period zero (the last savings period) because payment is made at the very date of future valuation and cannot be compounded.

PROBLEM:

a. What would a series of royalty payments amounting to $5,000 annually (after taxes) be worth in 10 years at 12% interest?

(NOTE: Remember to use Table 3 values.)

ASSIGNMENT SHEET #5

b. What would a series of payments made over 7 years be worth at 8% interest? Use the figures below.

(NOTE: Remember to use Table 1 values.)

YEAR	PAYMENT
1	$5,000
2	4,000
3	3,000
4	2,000
5	3,000
6	4,000
7	6,000

ASSIGNMENT SHEET #5

APPENDIX TABLE III

Future Value of a Uniform Series

$$V_N = \$1\left[\frac{(1+i)^N-1}{i}\right] = USFV_{i,N}$$

n	.5%	1%	1.5%	2%	2.5%	3%	3.5%	4%	5%	6%
1	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2	2.005	2.010	2.015	2.020	2.025	2.030	2.035	2.040	2.050	2.060
3	3.015	3.030	3.045	3.060	3.076	3.091	3.106	3.122	3.152	3.184
4	4.030	4.060	4.091	4.122	4.153	4.184	4.214	4.246	4.310	4.375
5	5.050	5.101	5.152	5.204	5.256	5.309	5.362	5.416	5.526	5.637
6	6.076	6.152	6.230	6.308	6.388	6.468	6.550	6.633	6.802	6.975
7	7.106	7.214	7.323	7.434	7.547	7.662	7.779	7.898	8.142	8.394
8	8.141	8.286	8.432	8.583	8.736	8.892	9.052	9.214	9.549	9.897
9	9.182	9.369	9.559	9.755	9.955	10.159	10.368	10.583	11.027	11.491
10	10.228	10.462	10.703	10.950	11.203	11.464	11.731	12.006	12.578	13.181
11	11.279	11.567	11.863	12.169	12.483	12.808	13.142	13.486	14.207	14.972
12	12.336	12.683	13.041	13.412	13.796	14.192	14.602	15.026	15.917	16.870
13	13.397	13.809	14.237	14.680	15.140	15.618	16.113	16.627	17.713	18.882
14	14.464	14.947	15.450	15.974	16.519	17.086	17.677	18.292	19.599	21.051
15	15.537	16.097	16.682	17.293	17.932	18.599	19.296	20.024	21.579	23.276
16	16.614	17.258	17.932	18.639	19.380	20.157	20.971	21.825	23.657	25.673
17	17,697	18.430	19.201	20.012	20.865	21.762	22.705	23.698	25.840	28.213
18	18.786	19.615	20.489	21.412	22.386	23.414	24.500	25.645	28.132	30.906
19	19.880	20.811	21.797	22.841	23.946	25.117	26.357	27.671	30.539	33.760
20	20.979	22.019	23.124	24.297	25.545	26.870	28.280	29.778	33.066	36.786
25	26.559	28.243	30.063	32.030	34.158	36.459	38.950	41.646	47.727	54.865
30	32.280	34.785	37.539	40.568	43.903	47.575	51.663	56.085	66.439	79.058
40	44.159	48.886	54.268	60.402	67.403	75.401	84.550	95.026	120.800	154.762
50	56.645	64.463	73.683	84.579	97.484	112.797	130.998	152.667	209.348	290.336

n	7%	8%	9%	10%	12%	14%	16%	20%	25%
1	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2	2.070	2.080	2.090	2.100	2.120	2.140	2.160	2.200	2.250
3	3.215	3.246	3.278	3.310	3.374	3.440	3.506	3.640	3.813
4	4.440	4.506	4.573	4.641	4.779	4.921	5.066	5.368	5.766
5	5.751	5.867	5.985	6.105	6.353	6.610	6.877	7.442	8.207
6	7.153	7.336	7.523	7.716	8.115	8.536	8.977	9.930	11.259
7	8.654	8.923	9.200	9.487	10.089	10.730	11.414	12.916	15.073
8	10.260	10.637	11.028	11.436	12.300	11.233	14.240	16.499	19.842
9	11.978	12.488	13.021	13.579	14.776	16.085	17.518	20.799	25.802
10	13.816	14.487	15.193	15.937	17.549	19.337	21.321	25.959	33.253
11	15.784	16.645	17.560	18.531	20.655	23.045	25.733	32.150	42.566
12	17.888	18.977	20.141	21.384	24.133	27.271	30.850	39.581	54.208
13	20.141	21.495	22.953	24.523	28.029	32.089	36.786	48.497	68.760
14	22.550	24.215	26.019	27.975	32.393	37.581	43.672	59.196	86.949
15	25.129	27.152	29.361	31.772	37.280	43.842	51.660	72.035	109.687
16	27.888	20.324	33.003	35.950	42.753	50.980	60.925	87.442	138.109
17	30.840	33.750	36.974	40.545	48.884	59.118	71.673	105.931	173.636
18	33.999	37.450	41.301	45.599	55.750	68.394	84.141	128.117	218.045
19	37.379	41.446	46.018	51.159	63.440	78.969	98.603	154.740	273.556
20	40.995	45.762	51.160	57.275	72.052	91.025	115.380	186.688	342.945
25	63.249	73.106	84.701	98.347	133.334	181.871	249.214	471.981	1054.791
30	94.461	113.283	136.308	164.494	241.333	356.787	530.312	1181.882	3227.174
40	199.635	259.057	337.882	442.593	761.091	1342.025	2360.757	7343.858	30088.655
50	406.529	573.770	815.084	1163.909	2400.018	4994.521	10435.649	45497.191	280255.693

ASSIGNMENT SHEET #5

APPENDIX TABLE I

Future Value of $1.00

$V_N = \$1(1+i)^N$

n	.5%	1%	1.5%	2%	2.5%	3%	3.5%	4%	5%	6%
1	1.005	1.010	1.015	1.020	1.025	1.030	1.035	1.040	1.050	1.060
2	1.010	1.020	1.030	1.040	1.051	1.061	1.071	1.082	1.103	1.124
3	1.015	1.030	1.046	1.061	1.077	1.093	1.109	1.125	1.158	1.191
4	1.020	1.041	1.061	1.082	1.104	1.126	1.148	1.170	1.216	1.262
5	1.025	1.051	1.077	1.104	1.131	1.159	1.188	1.217	1.276	1.338
6	1.030	1.062	1.093	1.126	1.160	1.194	1.229	1.265	1.340	1.419
7	1.036	1.072	1.110	1.149	1.189	1.230	1.272	1.316	1.407	1.504
8	1.041	1.083	1.126	1.172	1.218	1.267	1.317	1.369	1.477	1.594
9	1.046	1.094	1.143	1.195	1.249	1.305	1.363	1.423	1.551	1.690
10	1.051	1.105	1.161	1.219	1.280	1.344	1.411	1.480	1.629	1.791
11	1.056	1.116	1.178	1.243	1.312	1.384	1.460	1.539	1.710	1.898
12	1.062	1.127	1.196	1.268	1.345	1.426	1.511	1.601	1.796	2.012
13	1.067	1.138	1.214	1.294	1.379	1.469	1.564	1.665	1.886	2.133
14	1.072	1.149	1.232	1.319	1.413	1.513	1.619	1.732	1.980	2.261
15	1.078	1.161	1.250	1.346	1.448	1.558	1.675	1.801	2.079	2.397
16	1.083	1.173	1.269	1.373	1.485	1.605	1.734	1.873	2.183	2.540
17	1.088	1.184	1.288	1.400	1.522	1.653	1.795	1.948	2.292	2.693
18	1.094	1.196	1.307	1.428	1.560	1.702	1.857	2.026	2.407	2.854
19	1.099	1.208	1.327	1.457	1.599	1.754	1.923	2.107	2.527	3.026
20	1.105	1.220	1.347	1.486	1.639	1.806	1.990	2.191	2.653	3.207
25	1.133	1.282	1.451	1.641	1.854	2.094	2.363	2.666	3.386	4.292
30	1.161	1.348	1.563	1.811	2.098	2.427	2.807	3.243	4.322	5.743
40	1.221	1.489	1.814	2.208	2.685	3.262	3.959	4.801	7.040	10.286
50	1.283	1.645	2.105	2.692	3.437	4.384	5.585	7.107	11.467	18.420

n	7%	8%	9%	10%	12%	14%	16%	20%	25%
1	1.070	1.080	1.090	1.100	1.120	1.140	1.160	1.200	1.250
2	1.145	1.166	1.188	1.210	1.254	1.300	1.346	1.440	1.562
3	1.225	1.260	1.295	1.331	1.405	1.482	1.561	1.728	1.953
4	1.311	1.360	1.412	1.464	1.574	1.689	1.811	2.074	2.441
5	1.403	1.469	1.539	1.611	1.762	1.925	2.100	2.488	3.052
6	1.501	1.587	1.677	1.772	1.974	2.195	2.436	2.986	3.815
7	1.606	1.714	1.828	1.949	2.211	2.502	2.826	3.583	4.768
8	1.718	1.851	1.993	2.144	2.476	2.853	3.278	4.300	5.960
9	1.838	1.999	2.172	2.358	2.773	3.252	3.803	5.160	7.451
10	1.967	2.159	2.367	2.594	3.106	3.707	4.411	6.192	9.313
11	2.105	2.332	2.580	2.853	3.479	4.226	5.117	7.430	11.462
12	2.252	2.518	2.813	3.138	3.896	4.818	5.936	8.916	14.552
13	2.410	2.720	3.066	3.452	4.363	5.492	6.886	10.699	18.190
14	2.579	2.937	3.342	3.797	4.887	6.261	7.988	12.839	22.737
15	2.759	3.172	3.642	4.177	5.474	7.138	9.266	15.407	28.421
16	2.952	3.426	3.970	4.595	6.130	8.137	10.748	18.488	35.527
17	3.159	3.700	4.328	5.054	6.866	9.276	12.468	22.186	44.409
18	3.380	3.996	4.717	5.560	7.690	10.575	14.463	26.623	55.511
19	3.617	4.316	5.142	6.116	8.613	12.056	16.777	31.948	69.389
20	3.870	4.661	5.604	6.727	9.646	13.743	19.461	38.338	86.736
25	5.427	6.848	8.623	10.835	17.000	26.462	40.874	95.396	264.698
30	7.612	10.063	13.268	17.449	29.960	50.950	85.850	237.376	807.794
40	14.974	21.725	31.409	45.259	93.051	188.883	378.721	1469.772	7523.164
50	29.457	46.902	74.358	117.390	289.002	700.233	1670.704	9100.438	70064.923

CAPITAL BUDGETING
UNIT VII

ASSIGNMENT SHEET #6--COMPARE NET PRESENT VALUES

NAME________________________________ SCORE____________________

Before net present values can be compared, a number of points must be considered.

1. Uniform and non-uniform series of cash flows may be discounted to value projected cash flows for each investment alternative under consideration.

2. Net present values allow for the timing and magnitude of cash flows whereas payback period and simple rate of return do not.

3. A discount rate is selected which indicates the cooperator's minimum opportunity cost on equity capital.

   (NOTE: This may be the individual's cost of capital or a different discount rate which may incorporate degrees of risk, inflation, and the time value of money.)

4. Discount rates selected indicate the minimum level at which an investment would remain attractive.

5. If the net present value is greater than zero, the rate of return (i) is greater than the discount rate; an individual could pay (NPV) more for a given investment alternative and still break even.

6. If the net present value is equal to zero, the rate of return is equal to zero; the rate of return is equal to the discount rate.

   (NOTE: This is the break-even point.)

7. Alternative investments are ranked according to the sign and size of the investments' net present value.

   (NOTE: If all alternatives generate positive net present values, the cooperator chooses the alternative with the highest value. If the net present values are below zero, the investment alternatives are rejected.)

8. Selected alternatives imply profitability, but this is relative to the opportunity rate of return specified by the cooperator's minimum acceptable rate of return.

9. Typical investments, with a positive net present value, will have the highest net present value when the discount rate is zero.

   (NOTE: As discount rates increase, the present value of future cash inflows decrease. Net present value allows for the time effect on cash flows and is, therefore, a far superior method of rating investments rather than payback period or simple rate of return.)

ASSIGNMENT SHEET #6

10. The formula for calculating net present value for non-uniform cash flows is:

$$\text{NET PRESENT VALUE} = -I + \frac{P_1}{(1+i)} + \frac{P_2}{(1+i)^2} \ldots \frac{P_N}{(1+i)^N} + \frac{V_N}{(1+i)^N}$$

$-I$ = Initial investment

P_N = Annual net cash flows withdrawn, each attributable to the investment

V_N = Salvage value

i = Interest rate N = Number of periods

N = Number of periods

(NOTE: Substitute Table 2 values for $\frac{P_N}{(1+i)^N}$ for simplification of the formula.)

11. If net cash flows are estimated to be uniform, the formula for the calculation is:

$$\text{NET PRESENT VALUE} = -I + A \times (USPV_{i,N}) + \frac{V_N}{(1+i)^N}$$

A = Uniform series of cash flows annuity

i = Interest rate

V_N = Salvage value

N = Number of periods

USPV = Uniform Series Present Value, Table 4

$-I$ = Initial investment capital

Example: Assume a series of cash flows is estimated at the following rates for a beef and swine operation

YEAR	BEEF OPERATION	SWINE OPERATION
1	$ 500	$3,000
2	2,000	3,000
3	3,000	3,000
4	4,000	3,000
5	5,000	3,000

ASSIGNMENT SHEET #6

Initial investment of capital is $5,000; no salvage value is assumed. Required rate of return is 7%.

Calculating net present value of the beef operation requires us to use the formula for net present value with a non-uniform series of cash flows. The calculation is as follows:

NPV BEEF OPERATION = -$5,000 + 500 (.935) + 2,000 (.873) + 3,000 (.816) +

4,000 (.763) + 5,000 (.713)

NPV BEEF OPERATION = +$6,278.50

Calculating net present value of the swine operation requires using the formula for net present value with a uniform series of cash flows. The calculation is:

NPV SWINE OPERATION = -$5,000 + 3,000 (4.100)

NPV SWINE OPERATION = +$7,300.00

In this instance, both alternatives are income producing. Since the alternative using the swine operation is larger (+$7,300.00) than the beef alternative (+$6,278.50), the alternative indicating the swine operation would be selected under criteria previously established

(NOTE: Generally speaking, initial investment figures will be negative because they reflect a cash outflow.)

PROBLEM:

Assume a cooperator in south central Oklahoma has been trying to make a decision whether or not to expand the current farm organization. This cooperator reasons that land available for expansion is limited. That reasoning narrows considerations to a swine operation or a poultry operation. Net cash flows for each proposed investment are calculated. The proper deductions are made (operating expenses, income tax obligations, principal and interest payments where applicable) for the projected operating receipts in each year of the planning horizon. Length of time use is 5 years, and the minimum required rate of return is 12%. The initial investment for the poultry enterprise is $10,000 for housing, birds, equipment, etc. The initial investment for the swine enterprise is $12,000 for animals, housing, etc. Net cash flows for each period are indicated on the following page.

ASSIGNMENT SHEET #6

NET CASH FLOWS

YEAR	SWINE ENTERPRISE	POULTRY ENTERPRISE
1	$3,000	$3,000
2	3,500	3,000
3	4,000	3,000
4	4,500	3,000
5	5,000	3,000

Salvage values at the end of five years are estimated to be $1,500 for both capital expenditure proposals. Calculate the net present value of both proposals and determine which proposal would be accepted.

(NOTE: Remember one uses the non-uniform cash flows formula and the other uses the uniform cash flows formula.)

ASSIGNMENT SHEET #6

APPENDIX TABLE II

Present Value of $1.00

$V_o = \$1(1+i)^{-N}$

n	.5%	1%	1.5%	2%	2.5%	3%	3.5%	4%	5%	6%
1	.995	.990	.985	.980	.976	.971	.966	.962	.952	.943
2	.990	.980	.971	.961	.952	.943	.934	.925	.907	.890
3	.985	.971	.956	.942	.929	.915	.902	.889	.864	.840
4	.980	.961	.942	.924	.906	.888	.871	.855	.823	.792
5	.975	.951	.928	.906	.884	.863	.842	.822	.784	.747
6	.971	.942	.915	.888	.862	.837	.814	.790	.746	.705
7	.966	.933	.901	.871	.841	.813	.786	.760	.711	.665
8	.961	.923	.888	.853	.821	.789	.759	.731	.677	.627
9	.956	.914	.875	.837	.801	.766	.734	.703	.645	.592
10	.951	.905	.862	.820	.781	.744	.709	.676	.614	.558
11	.947	.896	.849	.804	.762	.722	.685	.650	.585	.527
12	.942	.887	.836	.788	.744	.701	.662	.625	.557	.497
13	.937	.879	.824	.773	.725	.681	.639	.601	.530	.469
14	.933	.870	.812	.758	.708	.661	.618	.577	.505	.442
15	.928	.861	.800	.743	.690	.642	.597	.555	.481	.417
16	.923	.853	.788	.728	.674	.623	.577	.534	.458	.394
17	.919	.844	.776	.714	.657	.605	.557	.513	.436	.371
18	.914	.836	.765	.700	.641	.587	.538	.494	.416	.350
19	.910	.828	.754	.686	.626	.570	.520	.475	.396	.331
20	.905	.820	.742	.673	.610	.554	.503	.456	.377	.312
25	.883	.780	.689	.610	.539	.478	.423	.375	.295	.233
30	.861	.742	.640	.552	.477	.412	.356	.308	.231	.174
40	.819	.672	.551	.453	.372	.307	.253	.208	.142	.097
50	.779	.608	.457	.372	.291	.228	.179	.141	.087	.054

n	7%	8%	9%	10%	12%	14%	16%	20%	25%
1	.935	.926	.917	.909	.893	.877	.862	.833	.800
2	.873	.857	.842	.826	.797	.769	.743	.694	.640
3	.816	.794	.772	.751	.712	.675	.641	.579	.512
4	.763	.735	.708	.683	.636	.592	.552	.482	.410
5	.713	.681	.650	.621	.567	.519	.476	.402	.328
6	.666	.630	.596	.564	.507	.456	.410	.335	.262
7	.623	.583	.547	.513	.452	.400	.354	.279	.210
8	.582	.540	.502	.467	.404	.351	.305	.233	.168
9	.544	.500	.460	.424	.361	.308	.263	.194	.134
10	.508	.463	.422	.386	.322	.270	.227	.162	.107
11	.475	.429	.388	.350	.287	.237	.195	.135	.086
12	.444	.397	.356	.319	.257	.208	.168	.112	.069
13	.415	.368	.326	.290	.229	.182	.145	.093	.055
14	.388	.340	.299	.263	.205	.160	.125	.078	.044
15	.362	.315	.275	.239	.183	.140	.108	.065	.035
16	.339	.292	.252	.218	.163	.123	.093	.054	.028
17	.317	.270	.231	.198	.146	.108	.080	.045	.023
18	.296	.250	.212	.180	.130	.095	.069	.038	.018
19	.277	.232	.194	.164	.116	.083	.060	.031	.014
20	.258	.215	.178	.149	.104	.073	.051	.026	.012
25	.184	.146	.116	.092	.059	.038	.024	.010	.004
30	.131	.099	.075	.057	.033	.020	.012	.004	.001
40	.067	.046	.032	.022	.011	.005	.003	.001	.000
50	.034	.021	.013	.009	.004	.001	.001	.000	.000

ASSIGNMENT SHEET #6

APPENDIX TABLE IV

Present Value of a Uniform Series

$$V_o = \$1\left[\frac{1-(1+i)^{-N}}{i}\right] = USPV_{i,N}$$

n	.5%	1%	1.5%	2%	2.5%	3%	3.5%	4%	5%	6%
1	.995	.990	.985	.980	.976	.971	.966	.962	.952	.943
2	1.985	1.970	1.956	1.942	1.927	1.913	1.900	1.886	1.859	1.833
3	2.970	2.941	2.912	2.884	2.856	2.829	2.802	2.775	2.723	2.673
4	3.950	3.902	3.854	3.808	3.762	3.717	3.673	3.630	3.546	3.465
5	4.926	4.853	4.783	4.713	4.646	4.580	4.515	4.452	4.329	4.212
6	5.896	5.795	5.697	5.601	5.508	5.417	5.329	5.242	5.076	4.917
7	6.862	6.728	6.598	6.472	6.349	6.230	6.115	6.002	5.786	5.582
8	7.823	7.652	7.486	7.325	7.170	7.020	6.874	6.733	6.463	6.210
9	8.779	8.566	8.361	8.162	7.971	7.786	7.608	7.435	7.108	6.802
10	9.730	9.471	9.222	8.893	8.752	8.530	8.317	8.111	7.722	7.360
11	10.677	10.368	10.071	9.787	9.514	9.253	9.002	8.760	8.306	7.887
12	11.619	11.255	10.908	10.575	10.258	9.954	9.663	9.385	8.863	8.384
13	12.556	12.134	11.732	11.348	10.983	10.635	10.303	9.986	9.394	8.853
14	13.489	13.004	12.543	12.106	11.691	11.296	10.921	10.563	9.899	9.295
15	14.417	13.865	13.343	12.849	12.381	11.938	11.517	11.118	10.380	9.712
16	15.340	14.718	14.131	13.578	13.055	12.561	12.094	11.652	10.838	10.106
17	16.259	15.562	14.908	14.292	13.712	13.166	12.651	12.166	11.274	10.477
18	17.173	16.398	15.673	14.992	14.353	13.754	13.190	12.659	11.690	10.828
19	18.082	17.226	16.426	15.678	14.979	14.324	13.710	13.134	12.085	11.158
20	18.987	18.046	17.169	16.351	15.589	14.877	14.212	13.590	12.462	11.470
25	23.446	22.023	20.720	19.523	18.424	17.413	16.482	15.622	14.094	12.783
30	27.794	25.808	24.016	22.397	20.930	19.600	18.392	17.292	15.373	13.765
40	36.172	32.838	29.916	27.355	25.103	23.115	21.355	19.793	17.159	15.046
50	44.143	39.196	35.000	31.424	28.362	25.730	23.456	21.482	18.256	15.762

n	7%	8%	9%	10%	12%	14%	16%	20%	25%
1	.935	.926	.917	.909	.893	.877	.862	.833	.800
2	1.808	1.783	1.759	1.736	1.690	1.647	1.605	1.528	1.440
3	2.624	2.577	2.531	2.487	2.402	2.322	2.246	2.106	1.952
4	3.387	3.312	3.240	3.170	3.037	2.914	2.798	2.589	2.362
5	4.100	3.993	3.890	3.791	3.605	3.433	3.274	2.991	2.689
6	4.767	4.623	4.486	4.355	4.111	3.889	3.685	3.326	2.951
7	5.389	5.206	5.033	4.868	4.564	4.288	4.039	3.605	3.161
8	6.971	5.747	5.535	5.335	4.968	4.639	4.344	3.837	3.329
9	6.515	6.247	5.995	5.759	5.328	4.946	4.607	4.031	3.463
10	7.024	6.710	6.418	6.145	5.650	5.216	4.833	4.192	3.571
11	7.499	7.139	6.805	6.495	5.938	5.453	5.029	4.327	3.656
12	7.943	7.536	7.161	6.814	6.194	5.660	5.197	4.439	3.725
13	8.358	7.904	7.487	7.103	6.424	5.842	5.342	4.533	3.780
14	8.745	8.244	7.786	7.367	6.628	6.002	5.468	4.611	3.824
15	9.108	8.559	8.060	7.606	6.811	6.142	5.575	4.675	3.859
16	9.447	8.851	8.313	7.824	6.974	6.265	5.668	4.730	3.887
17	9.763	9.122	8.544	8.022	7.120	6.373	5.749	4.775	3.910
18	10.059	9.372	8.756	8.201	7.250	6.467	5.818	4.812	3.928
19	10.336	9.604	8.950	8.365	7.366	6.550	5.877	4.843	3.942
20	10.594	9.818	9.129	8.514	7.469	6.623	5.929	4.870	3.954
25	11.654	10,675	9.823	9.077	7.843	6.873	6.097	4.948	3.985
30	12.409	11.258	10.274	9.427	8.055	7.003	6.177	4.979	3.995
40	13.332	11.925	10.757	9.779	8.244	7.105	6.233	4.997	3.999
50	13.801	12.233	10.962	9.915	8.304	7.133	6.246	4.999	4.000

CAPITAL BUDGETING
UNIT VII

ASSIGNMENT SHEET #7--CALCULATE SIMPLE RATE OF RETURN

NAME______________________________ SCORE__________________

Before calculating the simple rate of return, a number of points must be considered.

1. Simple rate of return expresses average net profits occurring each year as a result of an investment.

   (NOTE: This may be expressed as a percentage of original investment or average investment.)

2. Alternative investments are ranked according to relative sizes of their rates of return.

   (NOTE: The individual using this type of analysis would reject all alternatives providing a rate of return less than a predetermined required rate of return.)

3. It is a better measure of investment alternatives than payback period in that it considers earnings over the entire expected useful life of the investment.

4. Simple rate of return is not related to figures used in financial settings (rates on borrowed funds, bond yields).

   (NOTE: Rates in the financial world are calculated on the basis of capital used from year-to-year, rather than on an average investment.)

5. It does not take into consideration timing of capital expenditures and receipts.

   (NOTE: This does not allow the cooperator to take into consideration that a dollar of capital invested today is worth more than a dollar of benefits to be received someday in the future. This may suggest an incorrect management decision.)

6. Rates are used to evaluate the economic worth of the investment and are calculated as:

$$R = \frac{E - D}{C}$$

R = Rate of return

E = Expected additional average after tax earnings

C = Capital required for investment

D = Depreciation

ASSIGNMENT SHEET #7

Example: Assume an investment opportunity returns $5,000 average annual after tax profits less depreciation. The capital required for this investment is $75,000. The simple rate of return is calculated as follows:

$$\frac{\$5{,}000}{\$75{,}000} = 6.67\%$$

PROBLEM:

You are a cooperator in southeastern Oklahoma and are considering planting two acres of strawberries to sell as a truck crop. Initial investment required for the enterprise is $4,500 per acre. You calculate that the investment will return $800 annually per acre. Calculate the simple rate of return for this investment proposal.

CAPITAL BUDGETING
UNIT VII

ASSIGNMENT SHEET #8--CALCULATE PAYBACK PERIOD

NAME________________________________ SCORE____________________

Before the payback period can be calculated, a number of points must be considered.

1. Average annual after tax earnings should not include a deduction for depreciation.

   (NOTE: The formula determines recovery of the investment and a deduction for depreciation would result in double counting because depreciation also is concerned with capital recovery.)

2. Individuals using this type of capital expenditure analysis would set a maximum payback period as being acceptable, rejecting all other capital expenditure recommendations with a payback period longer than the maximum.

   (NOTE: When considering a number of propositions, the cooperator might wish to rank investment alternatives. Proposals with the shortest payback periods would be given highest ranking.)

3. Payback period requires estimation of capital outlays and annual cash flows which may be derived from the capital expenditure and this is better than no analysis at all.

4. Payback period fails to consider the entire life of an investment alternative.

   (NOTE: Cash flows after the initial investment capital has been recovered are not considered.)

5. Payback period does not measure profitability but measures liquidity (how quickly investment capital may be recovered).

   (NOTE: Under most circumstances, establishment of a cutoff point concerning the length of time which is acceptable for payback is highly subjective. Payback also ignores the timing of cash inflows and outflows.)

6. The formula for calculating payback period is:

   $$P = \frac{C}{E}$$

   P = Payback period

   C = Capital requirement

   E = Annual after tax earnings per period from investment

   Example: Expected returns are estimated at $7,000, per period, for a $21,000 investment. Payback period is estimated as follows:

   $$\frac{21{,}000}{7{,}000} = 3 \text{ periods}$$

ASSIGNMENT SHEET #8

7. When calculating payback period and the cash flows are irregular, the calculation is somewhat more difficult.

Example: This is most easily illustrated by the use of a simple diagram. Assume capital may be invested totaling $10,000 in Investment A or B. Estimated cash flows are depicted below:

CASH FLOWS

YEAR	INVESTMENT A		INVESTMENT B	
1	$5,000		$2,000	
2	3,000	$10,000	2,000	$10,000
3	2,000	3 years	2,000	5 years
4	500		2,000	
5	100		2,000	

(NOTE: Investment A requires 3 years as a payback period (Year 1: 5,000 + Year 2: 3,000 + Year 3: 2,000 = 10,000) while investment B requires 5 years as a payback period (Year 1: 2,000 + Year 2: 2,000 + Year 3: 2,000 + Year 4: 2,000 + Year 5: 2,000 = 10,000)

PROBLEM:

a. Calculate payback period for a grain sorghum investment which requires a $160,000 total investment and returns $12,737.00 per year.____________________________

ASSIGNMENT SHEET #8

b. Calculate payback period for the following investment in some land used for peanuts. Total investment is $50,000. Returns per year are indicated below:

YEAR	PEANUT INVESTMENT
1	$11,000
2	13,000
3	14,000
4	12,000
5	15,000

CAPITAL BUDGETING
UNIT VII

ASSIGNMENT SHEET #9--CALCULATE CAPITAL RECOVERY

NAME______________________________ SCORE____________________

What commonly is called a "capital recovery problem" in financial settings represents amoritization of a loan in which equal payments are made in each conversion period to repay a debt within a specified time period

Examples: Assume we want to calculate the amount of annual payments for a 30 year, 9% loan for $100,000. The following formula would be used

PV = A [TABLE 4 VALUE, for i, NCP]

PV = Present value:

Table 4 Value = Table 4 Present Value of a Uniform Series

i = Interest rate

NCP = Number of conversion periods

There are 30 conversion periods (years in this case); $100,000 is the present value; and 9% is the rate of interest

Using Table 4 on the following pages, our calculation is as follows:

$100,000 = A [Table 4 Present Value of a Uniform Series for 9% and 30 Conversion Periods]

$$A = \frac{\$100{,}000}{10.274}$$

A = $9,733.31

Annual payments of $9,733.31 for 30 years will completely repay the original loan plus interest

Assume you want to calculate the amount of annual payments on a $45,000 operating loan for 7 years at 12.0% interest. The calculation is as follows:

$45,000 = A [Table 4 Value for 12.0% and 7 Conversion Periods]

$$A = \frac{\$45{,}000}{4.564}$$

A = $9,859.77

Annual payments of $9,859.77 for 7 years will completely repay the loan plus interest

PROBLEM:

Calculate the amount of annual payments for a 40 year, 12.0% loan for $350,000 on a tract of land.

ASSIGNMENT SHEET #9

APPENDIX TABLE IV

Present Value of a Uniform Series

$$V_o = \$1\left[\frac{1-(1+i)^{-N}}{i}\right] = USPV_{i,N}$$

n	.5%	1%	1.5%	2%	2.5%	3%	3.5%	4%	5%	6%
1	.995	.990	.985	.980	.976	.971	.966	.962	.952	.943
2	1.985	1.970	1.956	1.942	1.927	1.913	1.900	1.886	1.859	1.833
3	2.970	2.941	2.912	2.884	2.856	2.829	2.802	2.775	2.723	2.673
4	3.950	3.902	3.854	3.808	3.762	3.717	3.673	3.630	3.546	3.465
5	4.926	4.853	4.783	4.713	4.646	4.580	4.515	4.452	4.329	4.212
6	5.896	5.795	5.697	5.601	5.508	5.417	5.329	5.242	5.076	4.917
7	6.862	6.728	6.598	6.472	6.349	6.230	6.115	6.002	5.786	5.582
8	7.823	7.652	7.486	7.325	7.170	7.020	6.874	6.733	6.463	6.210
9	8.779	8.566	8.361	8.162	7.971	7.786	7.608	7.435	7.108	6.802
10	9.730	9.471	9.222	8.893	8.752	8.530	8.317	8.111	7.722	7.360
11	10.677	10.368	10.071	9.787	9.514	9.253	9.002	8.760	8.306	7.887
12	11.619	11.255	10.908	10.575	10.258	9.954	9.663	9.385	8.863	8.384
13	12.556	12.134	11.732	11.348	10.983	10.635	10.303	9.986	9.394	8.853
14	13.489	13.004	12.543	12.106	11.691	11.296	10.921	10.563	9.899	9.295
15	14.417	13.865	13.343	12.849	12.381	11.938	11.517	11.118	10.380	9.712
16	15.340	14.718	14.131	13.578	13.055	12.561	12.094	11.652	10.838	10.106
17	16.259	15.562	14.908	14.292	13.712	13.166	12.651	12.166	11.274	10.477
18	17.173	16.398	15.673	14.992	14.353	13.754	13.190	12.659	11.690	10.828
19	18.082	17.226	16.426	15.678	14.979	14.324	13.710	13.134	12.085	11.158
20	18.987	18.046	17.169	16.351	15.589	14.877	14.212	13.590	12.462	11.470
25	23.446	22.023	20.720	19.523	18.424	17.413	16.482	15.622	14.094	12.783
30	27.794	25.808	24.016	22.397	20.930	19.600	18.392	17.292	15.373	13.765
40	36.172	32.838	29.916	27.355	25.103	23.115	21.355	19.793	17.159	15.046
50	44.143	39.196	35.000	31.424	28.362	25.730	23.456	21.482	18.256	15.762

n	7%	8%	9%	10%	12%	14%	16%	20%	25%
1	.935	.926	.917	.909	.893	.877	.862	.833	.800
2	1.808	1.783	1.759	1.736	1.690	1.647	1.605	1.528	1.440
3	2.624	2.577	2.531	2.487	2.402	2.322	2.246	2.106	1.952
4	3.387	3.312	3.240	3.170	3.037	2.914	2.798	2.589	2.362
5	4.100	3.993	3.890	3.791	3.605	3.433	3.274	2.991	2.689
6	4.767	4.623	4.486	4.355	4.111	3.889	3.685	3.326	2.951
7	5.389	5.206	5.033	4.868	4.564	4.288	4.039	3.605	3.161
8	6.971	5.747	5.535	5.335	4.968	4.639	4.344	3.837	3.329
9	6.515	6.247	5.995	5.759	5.328	4.946	4.607	4.031	3.463
10	7.024	6.710	6.418	6.145	5.650	5.216	4.833	4.192	3.571
11	7.499	7.139	6.805	6.495	5.938	5.453	5.029	4.327	3.656
12	7.943	7.536	7.161	6.814	6.194	5.660	5.197	4.439	3.725
13	8.358	7.904	7.487	7.103	6.424	5.842	5.342	4.533	3.780
14	8.745	8.244	7.786	7.367	6.628	6.002	5.468	4.611	3.824
15	9.108	8.559	8.060	7.606	6.811	6.142	5.575	4.675	3.859
16	9.447	8.851	8.313	7.824	6.974	6.265	5.668	4.730	3.887
17	9.763	9.122	8.544	8.022	7.120	6.373	5.749	4.775	3.910
18	10.059	9.372	8.756	8.201	7.250	6.467	5.818	4.812	3.928
19	10.336	9.604	8.950	8.365	7.366	6.550	5.877	4.843	3.942
20	10.594	9.818	9.129	8.514	7.469	6.623	5.929	4.870	3.954
25	11.654	10.675	9.823	9.077	7.843	6.873	6.097	4.948	3.985
30	12.409	11.258	10.274	9.427	8.055	7.003	6.177	4.979	3.995
40	13.332	11.925	10.757	9.779	8.244	7.105	6.233	4.997	3.999
50	13.801	12.233	10.962	9.915	8.304	7.133	6.246	4.999	4.000

CAPITAL BUDGETING
UNIT VII

ASSIGNMENT SHEET #10--COMPUTE SAVINGS PER CONVERSION PERIOD TO REACH A DESIGNATED LEVEL IN A SPECIFIED TIME PERIOD

NAME________________________________ SCORE _______________

You may, from time to time, have the occasion to save varying amounts of capital to purchase some item at a later date. If you want to know how much to save at a given interest rate to achieve some level of savings in a specific time frame, use the following formula:

PV = A [Table 3 Value, Future Value of a Uniform Series, for i, NCP]

PV = Present value

i = interest

NCP = Number of conversion periods

A = Annual annuity

Example: Assume you wish to accumulate $10,000 in a savings account in 3 years to buy a new hay baler. You may invest savings at 8% interest in a local savings institution. Interest is calculated quarterly. The amount you will have to save is calculated below:

Interest is equal to 2% per conversion period $\frac{.08}{4}$ for 12 periods (3 years x 4 quarters annually)

Using Table 3, Future Value of a Uniform Series, on the following pages, the equation looks like this:

$10,000 = A [Table 3, Value for 2% interest and 12 Conversion Periods]

$$A = \frac{\$10{,}000}{13.412}$$

A = $745.60

You must deposit $745.60 every 3 months to accumulate $10,000 in 3 years at 8% interest compounded quarterly

PROBLEM:

If you want to accumulate $100,000 in a savings account for retirement in 20 years, how much must you save at 10% interest calculated semi-annually?

ASSIGNMENT SHEET #10

APPENDIX TABLE III

Future Value of a Uniform Series

$$V_N = \$1\left[\frac{(1+i)^N-1}{i}\right] = \text{USFV}_{i,N}$$

n	.5%	1%	1.5%	2%	2.5%	3%	3.5%	4%	5%	6%
1	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2	2.005	2.010	2.015	2.020	2.025	2.030	2.035	2.040	2.050	2.060
3	3.015	3.030	3.045	3.060	3.076	3.091	3.106	3.122	3.152	3.184
4	4.030	4.060	4.091	4.122	4.153	4.184	4.214	4.246	4.310	4.375
5	5.050	5.101	5.152	5.204	5.256	5.309	5.362	5.416	5.526	5.637
6	6.076	6.152	6.230	6.308	6.388	6.468	6.550	6.633	6.802	6.975
7	7.106	7.214	7.323	7.434	7.547	7.662	7.779	7.898	8.142	8.394
8	8.141	8.286	8.432	8.583	8.736	8.892	9.052	9.214	9.549	9.897
9	9.182	9.369	9.559	9.755	9.955	10.159	10.368	10.583	11.027	11.491
10	10.228	10.462	10.703	10.950	11.203	11.464	11.731	12.006	12.578	13.181
11	11.279	11.567	11.863	12.169	12.483	12.808	13.142	13.486	14.207	14.972
12	12.336	12.683	13.041	13.412	13.796	14.192	14.602	15.026	15.917	16.870
13	13.397	13.809	14.237	14.680	15.140	15.618	16.113	16.627	17.713	18.882
14	14.464	14.947	15.450	15.974	16.519	17.086	17.677	18.292	19.599	21.051
15	15.537	16.097	16.682	17.293	17.932	18.599	19.296	20.024	21.579	23.276
16	16.614	17.258	17.932	18.639	19.380	20.157	20.971	21.825	23.657	25.673
17	17,697	18.430	19.201	20.012	20.865	21.762	22.705	23.698	25.840	28.213
18	18.786	19.615	20.489	21.412	22.386	23.414	24.500	25.645	28.132	30.906
19	19.880	20.811	21.797	22.841	23.946	25.117	26.357	27.671	30.539	33.760
20	20.979	22.019	23.124	24.297	25.545	26.870	28.280	29.778	33.066	36.786
25	26.559	28.243	30.063	32.030	34.158	36.459	38.950	41.646	47.727	54.865
30	32.280	34.785	37.539	40.568	43.903	47.575	51.663	56.085	66.439	79.058
40	44.159	48.886	54.268	60.402	67.403	75.401	84.550	95.026	120.800	154.762
50	56.645	64.463	73.683	84.579	97.484	112.797	130.998	152.667	209.348	290.336

n	7%	8%	9%	10%	12%	14%	16%	20%	25%
1	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2	2.070	2.080	2.090	2.100	2.120	2.140	2.160	2.200	2.250
3	3.215	3.246	3.278	3.310	3.374	3.440	3.506	3.640	3.813
4	4.440	4.506	4.573	4.641	4.779	4.921	5.066	5.368	5.766
5	5.751	5.867	5.985	6.105	6.353	6.610	6.877	7.442	8.207
6	7.153	7.336	7.523	7.716	8.115	8.536	8.977	9.930	11.259
7	8.654	8.923	9.200	9.487	10.089	10.730	11.414	12.916	15.073
8	10.260	10.637	11.028	11.436	12.300	11.233	14.240	16.499	19.842
9	11.978	12.488	13.021	13.579	14.776	16.085	17.518	20.799	25.802
10	13.816	14.487	15.193	15.937	17.549	19.337	21.321	25.959	33.253
11	15.784	16.645	17.560	18.531	20.655	23.045	25.733	32.150	42.566
12	17.888	18.977	20.141	21.384	24.133	27.271	30.850	39.581	54.208
13	20.141	21.495	22.953	24.523	28.029	32.089	36.786	48.497	68.760
14	22.550	24.215	26.019	27.975	32.393	37.581	43.672	59.196	86.949
15	25.129	27.152	29.361	31.772	37.280	43.842	51.660	72.035	109.687
16	27.888	20.324	33.003	35.950	42.753	50.980	60.925	87.442	138.109
17	30.840	33.750	36.974	40.545	48.884	59.118	71.673	105.931	173.636
18	33.999	37.450	41.301	45.599	55.750	68.394	84.141	128.117	218.045
19	37.379	41.446	46.018	51.159	63.440	78.969	98.603	154.740	273.556
20	40.995	45.762	51.160	57.275	72.052	91.025	115.380	186.688	342.945
25	63.249	73.106	84.701	98.347	133.334	181.871	249.214	471.981	1054.791
30	94.461	113.283	136.308	164.494	241.333	356.787	530.312	1181.882	3227.174
40	199.635	259.057	337.882	442.593	761.091	1342.025	2360.757	7343.858	30088.655
50	406.529	573.770	815.084	1163.909	2400.018	4994.521	10435.649	45497.191	280255.693

CAPITAL BUDGETING
UNIT VII

ASSIGNMENT SHEET #11--CALCULATE HOW MUCH DEBT MAY BE SUPPORTED WITH A GIVEN SERIES OF CASH FLOWS

NAME________________________________ SCORE___________________

You may want to calculate how much debt you could support if you have "N" dollars of capital available per year to invest.

This is an application of present value of a uniform series over a given period of time. The formula looks like this:

V_O = A [Table 4 Present Value of a Uniform Series, i, NCP]

V_O = Amount of debt which may be supported

A = Amount to be invested (payment)

i = interest rate

NCP = Number of Conversion Periods

(NOTE: Use Table 4 on the following pages.)

Examples:

1. Assume you have $10,000 each year to make principal and interest payments with, how much debt can you support assuming a 30 year, 9% interest loan?

   V_O = A [Table 4, Value for 9% interest and 30 conversion periods])

   V_O = $10,000 [10.274]

   V_O = $102,740.00

   You would be able to support $102,740.00 in debt

2. Assume you have $5,000 each year to make principal and interest payments with, how much debt can you support assuming a 15 year, 12% interest loan?

   V_O = A [Table 4, Value for 12% interest and 15 Conversion Periods]

   V_O = $5,000 [6.811]

   V_O = $34,055.00

   You would be able to support $34,055.00 in debt

ASSIGNMENT SHEET #11

3. Assume you have $3,600 a year to make principal and interest payments on a house ($300 x 12 months), how much house can you buy assuming a 30 year, 14% loan?

   V_O = A [Table 4, Value for 14% interest and 30 Conversion Periods]

   V_O = $3,600 [7.003]

   V_O = $25,210.00

   You could support a $25,210.00 house

   (NOTE: Actual amount of house that may be brought may be different depending on down payment, finders fees, and loan origination fees.)

PROBLEM:

a. Assume you have $9,600 each year to make principal and interest payments on a piece of land you are buying. How much debt can you support assuming a 30-year loan, at 10% interest?

b. How many acres could you buy at $1,200 per acre?

ASSIGNMENT SHEET #11

APPENDIX TABLE IV

Present Value of a Uniform Series

$$V_o = \$1\left[\frac{1-(1+i)^{-N}}{i}\right] = USPV_{i,N}$$

n	.5%	1%	1.5%	2%	2.5%	3%	3.5%	4%	5%	6%
1	.995	.990	.985	.980	.976	.971	.966	.962	.952	.943
2	1.985	1.970	1.956	1.942	1.927	1.913	1.900	1.886	1.859	1.833
3	2.970	2.941	2.912	2.884	2.856	2.829	2.802	2.775	2.723	2.673
4	3.950	3.902	3.854	3.808	3.762	3.717	3.673	3.630	3.546	3.465
5	4.926	4.853	4.783	4.713	4.646	4.580	4.515	4.452	4.329	4.212
6	5.896	5.795	5.697	5.601	5.508	5.417	5.329	5.242	5.076	4.917
7	6.862	6.728	6.598	6.472	6.349	6.230	6.115	6.002	5.786	5.582
8	7.823	7.652	7.486	7.325	7.170	7.020	6.874	6.733	6.463	6.210
9	8.779	8.566	8.361	8.162	7.971	7.786	7.608	7.435	7.108	6.802
10	9.730	9.471	9.222	8.893	8.752	8.530	8.317	8.111	7.722	7.360
11	10.677	10.368	10.071	9.787	9.514	9.253	9.002	8.760	8.306	7.887
12	11.619	11.255	10.908	10.575	10.258	9.954	9.663	9.385	8.863	8.384
13	12.556	12.134	11.732	11.348	10.983	10.635	10.303	9.986	9.394	8.853
14	13.489	13.004	12.543	12.106	11.691	11.296	10.921	10.563	9.899	9.295
15	14.417	13.865	13.343	12.849	12.381	11.938	11.517	11.118	10.380	9.712
16	15.340	14.718	14.131	13.578	13.055	12.561	12.094	11.652	10.838	10.106
17	16.259	15.562	14.908	14.292	13.712	13.166	12.651	12.166	11.274	10.477
18	17.173	16.398	15.673	14.992	14.353	13.754	13.190	12.659	11.690	10.828
19	18.082	17.226	16.426	15.678	14.979	14.324	13.710	13.134	12.085	11.158
20	18.987	18.046	17.169	16.351	15.589	14.877	14.212	13.590	12.462	11.470
25	23.446	22.023	20.720	19.523	18.424	17.413	16.482	15.622	14.094	12.783
30	27.794	25.808	24.016	22.397	20.930	19.600	18.392	17.292	15.373	13.765
40	36.172	32.838	29.916	27.355	25.103	23.115	21.355	19.793	17.159	15.046
50	44.143	39.196	35.000	31.424	28.362	25.730	23.456	21.482	18.256	15.762

n	7%	8%	9%	10%	12%	14%	16%	20%	25%
1	.935	.926	.917	.909	.893	.877	.862	.833	.800
2	1.808	1.783	1.759	1.736	1.690	1.647	1.605	1.528	1.440
3	2.624	2.577	2.531	2.487	2.402	2.322	2.246	2.106	1.952
4	3.387	3.312	3.240	3.170	3.037	2.914	2.798	2.589	2.362
5	4.100	3.993	3.890	3.791	3.605	3.433	3.274	2.991	2.689
6	4.767	4.623	4.486	4.355	4.111	3.889	3.685	3.326	2.951
7	5.389	5.206	5.033	4.868	4.564	4.288	4.039	3.605	3.161
8	6.971	5.747	5.535	5.335	4.968	4.639	4.344	3.837	3.329
9	6.515	6.247	5.995	5.759	5.328	4.946	4.607	4.031	3.463
10	7.024	6.710	6.418	6.145	5.650	5.216	4.833	4.192	3.571
11	7.499	7.139	6.805	6.495	5.938	5.453	5.029	4.327	3.656
12	7.943	7.536	7.161	6.814	6.194	5.660	5.197	4.439	3.725
13	8.358	7.904	7.487	7.103	6.424	5.842	5.342	4.533	3.780
14	8.745	8.244	7.786	7.367	6.628	6.002	5.468	4.611	3.824
15	9.108	8.559	8.060	7.606	6.811	6.142	5.575	4.675	3.859
16	9.447	8.851	8.313	7.824	6.974	6.265	5.668	4.730	3.887
17	9.763	9.122	8.544	8.022	7.120	6.373	5.749	4.775	3.910
18	10.059	9.372	8.756	8.201	7.250	6.467	5.818	4.812	3.928
19	10.336	9.604	8.950	8.365	7.366	6.550	5.877	4.843	3.942
20	10.594	9.818	9.129	8.514	7.469	6.623	5.929	4.870	3.954
25	11.654	10.675	9.823	9.077	7.843	6.873	6.097	4.948	3.985
30	12.409	11.258	10.274	9.427	8.055	7.003	6.177	4.979	3.995
40	13.332	11.925	10.757	9.779	8.244	7.105	6.233	4.997	3.999
50	13.801	12.233	10.962	9.915	8.304	7.133	6.246	4.999	4.000

CAPITAL BUDGETING
UNIT VII

ASSIGNMENT SHEET #12--COMPARE PAYBACK PERIOD, SIMPLE RATE OF RETURN, AND NET PRESENT VALUE METHODS OF INVESTMENT EVALUATION IN AN AGRICULTURAL SETTING

NAME________________________________ SCORE________________

In this assignment sheet, you will draw from previously completed assignment sheets and information sheets to complete the designated problem. Refer back to information and assignment sheets as needed to refresh your memory as to procedures and formulas.

PROBLEM:

From time-to-time, you may want to compare alternative investment proposals using a variety of investment analysis tools. As an enterprising cooperator you desire to compare two investment alternatives. You decide to compare the alternatives using payback period, simple rate of return, and net present value. The net cash flows are depicted below:

	NET CASH FLOW	
YEAR	INVESTMENT A	INVESTMENT B
1	$2,000	$6,000
2	3,000	5,000
3	4,000	3,000
4	5,000	1,000
5	6,000	500

Initial investment is calculated at $14,000. Interest rate assumed is 10%. Depreciation charges are already calculated in this example. Calculate payback period, simple rate of return, and net present value for both alternatives. Make comparisons and state which alternative to choose and reasons why.

a. Payback period:

b. Simple rate of return:

c. Net present value:

d. Conclusions:

ASSIGNMENT SHEET #12

APPENDIX TABLE I

Future Value of $1.00

$V_N = \$1(1+i)^N$

n	.5%	1%	1.5%	2%	2.5%	3%	3.5%	4%	5%	6%
1	1.005	1.010	1.015	1.020	1.025	1.030	1.035	1.040	1.050	1.060
2	1.010	1.020	1.030	1.040	1.051	1.061	1.071	1.082	1.103	1.124
3	1.015	1.030	1.046	1.061	1.077	1.093	1.109	1.125	1.158	1.191
4	1.020	1.041	1.061	1.082	1.104	1.126	1.148	1.170	1.216	1.262
5	1.025	1.051	1.077	1.104	1.131	1.159	1.188	1.217	1.276	1.338
6	1.030	1.062	1.093	1.126	1.160	1.194	1.229	1.265	1.340	1.419
7	1.036	1.072	1.110	1.149	1.189	1.230	1.272	1.316	1.407	1.504
8	1.041	1.083	1.126	1.172	1.218	1.267	1.317	1.369	1.477	1.594
9	1.046	1.094	1.143	1.195	1.249	1.305	1.363	1.423	1.551	1.690
10	1.051	1.105	1.161	1.219	1.280	1.344	1.411	1.480	1.629	1.791
11	1.056	1.116	1.178	1.243	1.312	1.384	1.460	1.539	1.710	1.898
12	1.062	1.127	1.196	1.268	1.345	1.426	1.511	1.601	1.796	2.012
13	1.067	1.138	1.214	1.294	1.379	1.469	1.564	1.665	1.886	2.133
14	1.072	1.149	1.232	1.319	1.413	1.513	1.619	1.732	1.980	2.261
15	1.078	1.161	1.250	1.346	1.448	1.558	1.675	1.801	2.079	2.397
16	1.083	1.173	1.269	1.373	1.485	1.605	1.734	1.873	2.183	2.540
17	1.088	1.184	1.288	1.400	1.522	1.653	1.795	1.948	2.292	2.693
18	1.094	1.196	1.307	1.428	1.560	1.702	1.857	2.026	2.407	2.854
19	1.099	1.208	1.327	1.457	1.599	1.754	1.923	2.107	2.527	3.026
20	1.105	1.220	1.347	1.486	1.639	1.806	1.990	2.191	2.653	3.207
25	1.133	1.282	1.451	1.641	1.854	2.094	2.363	2.666	3.386	4.292
30	1.161	1.348	1.563	1.811	2.098	2.427	2.807	3.243	4.322	5.743
40	1.221	1.489	1.814	2.208	2.685	3.262	3.959	4.801	7.040	10.286
50	1.283	1.645	2.105	2.692	3.437	4.384	5.585	7.107	11.467	18.420

n	7%	8%	9%	10%	12%	14%	16%	20%	25%
1	1.070	1.080	1.090	1.100	1.120	1.140	1.160	1.200	1.250
2	1.145	1.166	1.188	1.210	1.254	1.300	1.346	1.440	1.562
3	1.225	1.260	1.295	1.331	1.405	1.482	1.561	1.728	1.953
4	1.311	1.360	1.412	1.464	1.574	1.689	1.811	2.074	2.441
5	1.403	1.469	1.539	1.611	1.762	1.925	2.100	2.488	3.052
6	1.501	1.587	1.677	1.772	1.974	2.195	2.436	2.986	3.815
7	1.606	1.714	1.828	1.949	2.211	2.502	2.826	3.583	4.768
8	1.718	1.851	1.993	2.144	2.476	2.853	3.278	4.300	5.960
9	1.838	1.999	2.172	2.358	2.773	3.252	3.803	5.160	7.451
10	1.967	2.159	2.367	2.594	3.106	3.707	4.411	6.192	9.313
11	2.105	2.332	2.580	2.853	3.479	4.226	5.117	7.430	11.462
12	2.252	2.518	2.813	3.138	3.896	4.818	5.936	8.916	14.552
13	2.410	2.720	3.066	3.452	4.363	5.492	6.886	10.699	18.190
14	2.579	2.937	3.342	3.797	4.887	6.261	7.988	12.839	22.737
15	2.759	3.172	3.642	4.177	5.474	7.138	9.266	15.407	28.421
16	2.952	3.426	3.970	4.595	6.130	8.137	10.748	18.488	35.527
17	3.159	3.700	4.328	5.054	6.866	9.276	12.468	22.186	44.409
18	3.380	3.996	4.717	5.560	7.690	10.575	14.463	26.623	55.511
19	3.617	4.316	5.142	6.116	8.613	12.056	16.777	31.948	69.389
20	3.870	4.661	5.604	6.727	9.646	13.743	19.461	38.338	86.736
25	5.427	6.848	8.623	10.835	17.000	26.462	40.874	95.396	264.698
30	7.612	10.063	13.268	17.449	29.960	50.950	85.850	237.376	807.794
40	14.974	21.725	31.409	45.259	93.051	188.883	378.721	1469.772	7523.164
50	29.457	46.902	74.358	117.390	289.002	700.233	1670.704	9100.438	70064.923

ASSIGNMENT SHEET #12

APPENDIX TABLE II

Present Value of $1.00

$V_o = \$1(1+i)^{-N}$

n	.5%	1%	1.5%	2%	2.5%	3%	3.5%	4%	5%	6%
1	.995	.990	.985	.980	.976	.971	.966	.962	.952	.943
2	.990	.980	.971	.961	.952	.943	.934	.925	.907	.890
3	.985	.971	.956	.942	.929	.915	.902	.889	.864	.840
4	.980	.961	.942	.924	.906	.888	.871	.855	.823	.792
5	.975	.951	.928	.906	.884	.863	.842	.822	.784	.747
6	.971	.942	.915	.888	.862	.837	.814	.790	.746	.705
7	.966	.933	.901	.871	.841	.813	.786	.760	.711	.665
8	.961	.923	.888	.853	.821	.789	.759	.731	.677	.627
9	.956	.914	.875	.837	.801	.766	.734	.703	.645	.592
10	.951	.905	.862	.820	.781	.744	.709	.676	.614	.558
11	.947	.896	.849	.804	.762	.722	.685	.650	.585	.527
12	.942	.887	.836	.788	.744	.701	.662	.625	.557	.497
13	.937	.879	.824	.773	.725	.681	.639	.601	.530	.469
14	.933	.870	.812	.758	.708	.661	.618	.577	.505	.442
15	.928	.861	.800	.743	.690	.642	.597	.555	.481	.417
16	.923	.853	.788	.728	.674	.623	.577	.534	.458	.394
17	.919	.844	.776	.714	.657	.605	.557	.513	.436	.371
18	.914	.836	.765	.700	.641	.587	.538	.494	.416	.350
19	.910	.828	.754	.686	.626	.570	.520	.475	.396	.331
20	.905	.820	.742	.673	.610	.554	.503	.456	.377	.312
25	.883	.780	.689	.610	.539	.478	.423	.375	.295	.233
30	.861	.742	.640	.552	.477	.412	.356	.308	.231	.174
40	.819	.672	.551	.453	.372	.307	.253	.208	.142	.097
50	.779	.608	.457	.372	.291	.228	.179	.141	.087	.054

n	7%	8%	9%	10%	12%	14%	16%	20%	25%
1	.935	.926	.917	.909	.893	.877	.862	.833	.800
2	.873	.857	.842	.826	.797	.769	.743	.694	.640
3	.816	.794	.772	.751	.712	.675	.641	.579	.512
4	.763	.735	.708	.683	.636	.592	.552	.482	.410
5	.713	.681	.650	.621	.567	.519	.476	.402	.328
6	.666	.630	.596	.564	.507	.456	.410	.335	.262
7	.623	.583	.547	.513	.452	.400	.354	.279	.210
8	.582	.540	.502	.467	.404	.351	.305	.233	.168
9	.544	.500	.460	.424	.361	.308	.263	.194	.134
10	.508	.463	.422	.386	.322	.270	.227	.162	.107
11	.475	.429	.388	.350	.287	.237	.195	.135	.086
12	.444	.397	.356	.319	.257	.208	.168	.112	.069
13	.415	.368	.326	.290	.229	.182	.145	.093	.055
14	.388	.340	.299	.263	.205	.160	.125	.078	.044
15	.362	.315	.275	.239	.183	.140	.108	.065	.035
16	.339	.292	.252	.218	.163	.123	.093	.054	.028
17	.317	.270	.231	.198	.146	.108	.080	.045	.023
18	.296	.250	.212	.180	.130	.095	.069	.038	.018
19	.277	.232	.194	.164	.116	.083	.060	.031	.014
20	.258	.215	.178	.149	.104	.073	.051	.026	.012
25	.184	.146	.116	.092	.059	.038	.024	.010	.004
30	.131	.099	.075	.057	.033	.020	.012	.004	.001
40	.067	.046	.032	.022	.011	.005	.003	.001	.000
50	.034	.021	.013	.009	.004	.001	.001	.000	.000

ASSIGNMENT SHEET #12

APPENDIX TABLE III

Future Value of a Uniform Series

$$V_N = \$1\left[\frac{(1+i)^N-1}{i}\right] = USFV_{i,N}$$

n	.5%	1%	1.5%	2%	2.5%	3%	3.5%	4%	5%	6%
1	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2	2.005	2.010	2.015	2.020	2.025	2.030	2.035	2.040	2.050	2.060
3	3.015	3.030	3.045	3.060	3.076	3.091	3.106	3.122	3.152	3.184
4	4.030	4.060	4.091	4.122	4.153	4.184	4.214	4.246	4.310	4.375
5	5.050	5.101	5.152	5.204	5.256	5.309	5.362	5.416	5.526	5.637
6	6.076	6.152	6.230	6.308	6.388	6.468	6.550	6.633	6.802	6.975
7	7.106	7.214	7.323	7.434	7.547	7.662	7.779	7.898	8.142	8.394
8	8.141	8.286	8.432	8.583	8.736	8.892	9.052	9.214	9.549	9.897
9	9.182	9.369	9.559	9.755	9.955	10.159	10.368	10.583	11.027	11.491
10	10.228	10.462	10.703	10.950	11.203	11.464	11.731	12.006	12.578	13.181
11	11.279	11.567	11.863	12.169	12.483	12.808	13.142	13.486	14.207	14.972
12	12.336	12.683	13.041	13.412	13.796	14.192	14.602	15.026	15.917	16.870
13	13.397	13.809	14.237	14.680	15.140	15.618	16.113	16.627	17.713	18.882
14	14.464	14.947	15.450	15.974	16.519	17.086	17.677	18.292	19.599	21.051
15	15.537	16.097	16.682	17.293	17.932	18.599	19.296	20.024	21.579	23.276
16	16.614	17.258	17.932	18.639	19.380	20.157	20.971	21.825	23.657	25.673
17	17,697	18.430	19.201	20.012	20.865	21.762	22.705	23.698	25.840	28.213
18	18.786	19.615	20.489	21.412	22.386	23.414	24.500	25.645	28.132	30.906
19	19.880	20.811	21.797	22.841	23.946	25.117	26.357	27.671	30.539	33.760
20	20.979	22.019	23.124	24.297	25.545	26.870	28.280	29.778	33.066	36.786
25	26.559	28.243	30.063	32.030	34.158	36.459	38.950	41.646	47.727	54.865
30	32.280	34.785	37.539	40.568	43.903	47.575	51.663	56.085	66.439	79.058
40	44.159	48.886	54.268	60.402	67.403	75.401	84.550	95.026	120.800	154.762
50	56.645	64.463	73.683	84.579	97.484	112.797	130.998	152.667	209.348	290.336

n	7%	8%	9%	10%	12%	14%	16%	20%	25%
1	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2	2.070	2.080	2.090	2.100	2.120	2.140	2.160	2.200	2.250
3	3.215	3.246	3.278	3.310	3.374	3.440	3.506	3.640	3.813
4	4.440	4.506	4.573	4.641	4.779	4.921	5.066	5.368	5.766
5	5.751	5.867	5.985	6.105	6.353	6.610	6.877	7.442	8.207
6	7.153	7.336	7.523	7.716	8.115	8.536	8.977	9.930	11.259
7	8.654	8.923	9.200	9.487	10.089	10.730	11.414	12.916	15.073
8	10.260	10.637	11.028	11.436	12.300	11.233	14.240	16.499	19.842
9	11.978	12.488	13.021	13.579	14.776	16.085	17.518	20.799	25.802
10	13.816	14.487	15.193	15.937	17.549	19.337	21.321	25.959	33.253
11	15.784	16.645	17.560	18.531	20.655	23.045	25.733	32.150	42.566
12	17.888	18.977	20.141	21.384	24.133	27.271	30.850	39.581	54.208
13	20.141	21.495	22.953	24.523	28.029	32.089	36.786	48.497	68.760
14	22.550	24.215	26.019	27.975	32.393	37.581	43.672	59.196	86.949
15	25.129	27.152	29.361	31.772	37.280	43.842	51.660	72.035	109.687
16	27.888	20.324	33.003	35.950	42.753	50.980	60.925	87.442	138.109
17	30.840	33.750	36.974	40.545	48.884	59.118	71.673	105.931	173.636
18	33.999	37.450	41.301	45.599	55.750	68.394	84.141	128.117	218.045
19	37.379	41.446	46.018	51.159	63.440	78.969	98.603	154.740	273.556
20	40.995	45.762	51.160	57.275	72.052	91.025	115.380	186.688	342.945
25	63.249	73.106	84.701	98.347	133.334	181.871	249.214	471.981	1054.791
30	94.461	113.283	136.308	164.494	241.333	356.787	530.312	1181.882	3227.174
40	199.635	259.057	337.882	442.593	761.091	1342.025	2360.757	7343.858	30088.655
50	406.529	573.770	815.084	1163.909	2400.018	4994.521	10435.649	45497.191	280255.693

ASSIGNMENT SHEET #12

APPENDIX TABLE IV

Present Value of a Uniform Series

$$V_o = \$1\left[\frac{1-(1+i)^{-N}}{i}\right] = USPV_{i,N}$$

n	.5%	1%	1.5%	2%	2.5%	3%	3.5%	4%	5%	6%
1	.995	.990	.985	.980	.976	.971	.966	.962	.952	.943
2	1.985	1.970	1.956	1.942	1.927	1.913	1.900	1.886	1.859	1.833
3	2.970	2.941	2.912	2.884	2.856	2.829	2.802	2.775	2.723	2.673
4	3.950	3.902	3.854	3.808	3.762	3.717	3.673	3.630	3.546	3.465
5	4.926	4.853	4.783	4.713	4.646	4.580	4.515	4.452	4.329	4.212
6	5.896	5.795	5.697	5.601	5.508	5.417	5.329	5.242	5.076	4.917
7	6.862	6.728	6.598	6.472	6.349	6.230	6.115	6.002	5.786	5.582
8	7.823	7.652	7.486	7.325	7.170	7.020	6.874	6.733	6.463	6.210
9	8.779	8.566	8.361	8.162	7.971	7.786	7.608	7.435	7.108	6.802
10	9.730	9.471	9.222	8.893	8.752	8.530	8.317	8.111	7.722	7.360
11	10.677	10.368	10.071	9.787	9.514	9.253	9.002	8.760	8.306	7.887
12	11.619	11.255	10.908	10.575	10.258	9.954	9.663	9.385	8.863	8.384
13	12.556	12.134	11.732	11.348	10.983	10.635	10.303	9.986	9.394	8.853
14	13.489	13.004	12.543	12.106	11.691	11.296	10.921	10.563	9.899	9.295
15	14.417	13.865	13.343	12.849	12.381	11.938	11.517	11.118	10.380	9.712
16	15.340	14.718	14.131	13.578	13.055	12.561	12.094	11.652	10.838	10.106
17	16.259	15.562	14.908	14.292	13.712	13.166	12.651	12.166	11.274	10.477
18	17.173	16.398	15.673	14.992	14.353	13.754	13.190	12.659	11.690	10.828
19	18.082	17.226	16.426	15.678	14.979	14.324	13.710	13.134	12.085	11.158
20	18.987	18.046	17.169	16.351	15.589	14.877	14.212	13.590	12.462	11.470
25	23.446	22.023	20.720	19.523	18.424	17.413	16.482	15.622	14.094	12.783
30	27.794	25.808	24.016	22.397	20.930	19.600	18.392	17.292	15.373	13.765
40	36.172	32.838	29.916	27.355	25.103	23.115	21.355	19.793	17.159	15.046
50	44.143	39.196	35.000	31.424	28.362	25.730	23.456	21.482	18.256	15.762

n	7%	8%	9%	10%	12%	14%	16%	20%	25%
1	.935	.926	.917	.909	.893	.877	.862	.833	.800
2	1.808	1.783	1.759	1.736	1.690	1.647	1.605	1.528	1.440
3	2.624	2.577	2.531	2.487	2.402	2.322	2.246	2.106	1.952
4	3.387	3.312	3.240	3.170	3.037	2.914	2.798	2.589	2.362
5	4.100	3.993	3.890	3.791	3.605	3.433	3.274	2.991	2.689
6	4.767	4.623	4.486	4.355	4.111	3.889	3.685	3.326	2.951
7	5.389	5.206	5.033	4.868	4.564	4.288	4.039	3.605	3.161
8	6.971	5.747	5.535	5.335	4.968	4.639	4.344	3.837	3.329
9	6.515	6.247	5.995	5.759	5.328	4.946	4.607	4.031	3.463
10	7.024	6.710	6.418	6.145	5.650	5.216	4.833	4.192	3.571
11	7.499	7.139	6.805	6.495	5.938	5.453	5.029	4.327	3.656
12	7.943	7.536	7.161	6.814	6.194	5.660	5.197	4.439	3.725
13	8.358	7.904	7.487	7.103	6.424	5.842	5.342	4.533	3.780
14	8.745	8.244	7.786	7.367	6.628	6.002	5.468	4.611	3.824
15	9.108	8.559	8.060	7.606	6.811	6.142	5.575	4.675	3.859
16	9.447	8.851	8.313	7.824	6.974	6.265	5.668	4.730	3.887
17	9.763	9.122	8.544	8.022	7.120	6.373	5.749	4.775	3.910
18	10.059	9.372	8.756	8.201	7.250	6.467	5.818	4.812	3.928
19	10.336	9.604	8.950	8.365	7.366	6.550	5.877	4.843	3.942
20	10.594	9.818	9.129	8.514	7.469	6.623	5.929	4.870	3.954
25	11.654	10,675	9.823	9.077	7.843	6.873	6.097	4.948	3.985
30	12.409	11.258	10.274	9.427	8.055	7.003	6.177	4.979	3.995
40	13.332	11.925	10.757	9.779	8.244	7.105	6.233	4.997	3.999
50	13.801	12.233	10.962	9.915	8.304	7.133	6.246	4.999	4.000

CAPITAL BUDGETING
UNIT VII

ANSWERS TO ASSIGNMENT SHEETS

Assignment Sheet #1--5 years = $5,000 x 1.762 = $8,810.00

10 years = $5,000 x 3.106 = $15,530.00

30 years = $5,000 x 29.960 = $149,800.00

Assignment Sheet #2--$\$6{,}000 \times 1 + \frac{.12}{4}^{(5) \times (4)}$

$\$6{,}000 \times (1.03)^{20}$

$6,000 x 1.8061

$10,836.60

Assignment Sheet #3--PV = $1,000 x .864

PV = $864.00

Assignment Sheet #4

a. PV = $2,000 x 6.418

= $12,836.00

b. PV = $3,500(.935) + 4,500(.873) + 5,500(.816) + 6,500(.763) + 7,500(.713) = $21,996.00

Assignment Sheet #5

a. FV = 5,000 x 17.549

FV = $87,745.00

b. FV = 5,000(1.587) + 4,000(1.469) + 3,000 (1.360) + 2,000(1.260) + 3,000 (1.166) + 4,000(1.08) + 6,000

FV = $34,229.00

Assignment Sheet #6

a. NPV Swine operation:

NPV = -$12,000 + 3,000(.893) + 3,500(.797) + 4,000(.712) + 4,500(.636) + 5,000(.567) + 1,500 (.567)

NPV = +$2,864.00

b. NPV Poultry operation:

$NPV = -\$10{,}000 + 3{,}000(3.605) + 1{,}500(.567)$

$NPV = +\$1{,}665.50$

The swine investment would be preferred

Assignment Sheet #7-- $\frac{\$800}{\$4{,}500}$ = 17.78% simple rate of return

Assignment Sheet #8

a. Grain sorghum payback period $\frac{160{,}000}{12{,}737} = 12.56$ years

b. Peanut payback period is equal to 4 years

Assignment Sheet #9-$350,000 = A [Table 4 Value for 12.0% interest and 40 Conversion Periods]

$$A = \frac{\$350{,}000}{8.244}$$

$A = \$42{,}455.11$

Annual payments of $42,455.11 will completely repay the loan plus interest

Assignment Sheet #10--$100,000 = A [Table 3 Value for 5% interest and 40 Conversion Periods]

$$A = \frac{\$100{,}000}{120.800}$$

$A = \$827.81$

You must save $827.81 every six months to save $100,000 in 20 years

Assignment Sheet #11

a. V_O = A [Table 4 Value for 10% interest and 30 Conversion Periods]

$V_O = \$9{,}600 \times 9.427$

$V_O = \$90{,}499.20$

You could support $90,499.20 in debt

b. $90,499.20/$1,200 per acre = 75.42 acres

You could buy 75.42 acres at $1,200 per acre

Assignment Sheet #12

a. Payback period for investment A is 4 years, payback period for investment B is 3 years

b. Simple rate of return for investment A is equal to $\frac{4,000}{14,000} = 28.57\%$

Simple rate of return for investment B is equal to $\frac{3,100}{14,000} = 22.14\%$

c. Net present value for investment A is equal to:

NPV A = -$14,000 + 2,000(.909) + 3,000(.826) + 4,000(.751) + 5,000(.683) + 6,000(.621)

NPV A = +$441.00

Net present value for investment B is equal to:

NPV B = -$14,000 + 6,000(.909) + 5,000(.826) + 3,000(.751) + 1,000(.683) + 500(.621)

NPV B = -$1169.50

d. In this instance, the payback period suggested choosing alternative B, which was the shortest payback period. Simple rate of return suggested alternative A which has a 28.57% average rate of return. Net present value tells us to choose investment A because of the positive net present value. From our discussions, we know net present value to be the most reliable indicator of capital expenditure economic worth. On this basis, investment A would be selected

CAPTIAL BUDGETING
UNIT VII

TEST

NAME_______________________________ SCORE_______________

1. Match terms associated with capital budgeting to the correct definitions. Write the correct numbers in the blanks provided.

_____a. Process involving current investments in which cash flows will be received sometime in the future

_____b. Process of determining present value of a series of payments to be received indefinitely

_____c. Series of fixed or periodic payments

_____d. Mathematical procedure to determine present values of amounts to be received in the future

_____e. Value of alternative investment opportunities that resources used in current production would have produced

_____f. Time taken for the business to recover the initial investment out of earnings expected to arise because of the investment

_____g. Mathematical procedure to determine future values of an amount invested at present

1. Discounting
2. Opportunity costs
3. Payback period
4. Annuity
5. Capital budgeting
6. Capitalization
7. Compounding

2. State uses of capital budgeting. Write your answer in the space provided.

a. ____

b. ____

c. ____

d. ____

3. Arrange in order steps in evaluating capital expenditure proposals. Write in the correct blanks a "1" for the first step, a "2" for the second step, and so on.

_____a. Act on analysis performed

_____b. Determine steps for improving future expenditure selections

_____c. Determine profit potential for capital expenditure alternatives

_____d. Identify potentially profitable capital expenditure alternatives

_____e. Evaluate actions taken

4. Select from the list below characteristics of net cash flows. Mark each correct answer with an "X" in the blanks provided.

    ______a. Many inflows and outflows relating to the investment alternative are not included

    ______b. Farming business net cash flow should be used for analysis purposes rather than accounting net figures

    ______c. Depreciation and inventory charges are included

    ______d. All inflows and outflows relating to the investment alternative are included

    ______e. Cash flow income tax charges should include the cooperator's deduction of investment tax credit

    ______f. Depreciation and inventory charges are not included

5. Select from the list below characteristics of future value of a present sum. Mark each correct answer with an "X" in the blanks provided.

    ______a. Is used for all investment analyses

    ______b. Is used to calculate what an amount of capital currently held (present sum) would be worth at some time in the future

    ______c. Is used to determine what a future sum is worth today

    ______d. May be used to calculate interest which would be paid on an amount borrowed

6. State the use of present value of a future sum. Write your answer in the space provided.

7. Select from the list below characteristics of present value of a uniform and non-uniform series of payments. Mark each correct answer with an "X" in the blanks provided.

_____a. Are used mainly when an estimate of a series of cash flows, which may be yearly net income from the investment, is known, is discounted, and allows the individual to know the size of the discount for the delayed receipt of payments

_____b. Determines future value of a series of payments now received

_____c. Indicate earnings lost by not investing payments in an alternative investment yielding the same returns as the investment

8. State the use of a future value of a uniform and non-uniform series of payments. Write your answer in the space provided.

____

____

____

____

____

____

____

9. Name techniques used to evaluate investment alternatives. Write your answer in the blanks provided.

a. ______________________________

b. ______________________________

c. ______________________________

d. ______________________________

e. ______________________________

10. Select from the list below characteristics of net present value in evaluating an investment proposal. Mark each correct answer with an "X" in the blanks provided.

_____a. Is useful in determining if an investment will or will not return the desired rate of return

_____b. Is not as useful as the payback period in analyzing investment

_____c. Indicates if an investment proposal is desirable at a selected percentage rate of return

_____d. Is not as useful as simple rate of return in evaluating investment proposals _____e. Involves determining net present value of net cash inflows or benefits and subtracting the present value of net cash outflows

_____f. Accepts investment proposal if the final figure is positive; rejects proposal if the final figure is negative

11. Calculate the future value of a present sum with one-year conversion periods.
12. Calculate the future value of a present sum.
13. Calculate the present value of a future sum.
14. Calculate present value in a uniform and non-uniform series of payments.
15. Calculate future value in a uniform and non-uniform series of payments.
16. Compare net present values.
17. Calculate simple rate of return.
18. Calculate payback period.
19. Calculate capital recovery.
20. Compute savings per conversion period to reach a designated level in a specified time period.
21. Calculate how much debt may be supported with a given series of cash flows.
22. Compare payback period, simple rate of return, and net present value methods of investment evaluation in an agricultural setting.

(NOTE: If any of the above activities have not been done before the test, ask your instructor when these will be finished.)

CAPITAL BUDGETING
UNIT VII

ANSWERS TO TEST

1. a. 5
   b. 6
   c. 4
   d. 1
   e. 2
   f. 3
   g. 7
2. a. Allows individuals to maximize their economic goals
   b. Allows individuals to make better decisions in the economic unit
   c. Gives an idea of the costs associated with a particular enterprise
   d. Maximizes returns on a given set of investment alternatives
3. a. 3
   b. 5
   c. 2
   d. 1
   e. 4
4. b, d, e, f
5. b, d
6. Is used to a great extent by individuals who are considering making an investment in some investment opportunity in which the future amount to be received is known, with a certain asking price to participate in the investment being asked for today
7. a, c
8. Used extensively by individuals who will be investing amounts over a period of years and determining what those investments' total worth will be at a future date

9. a. Net present value
   b. Simple rate of return
   c. Payback period
   d. Amoritization
   e. Capitalization
10. a, c, e, f
11. Evaluated to satisfaction of instructor
12. Evaluated to satisfaction of instructor
13. Evaluated to satisfaction of instructor
14. Evaluated to satisfaction of instructor
15. Evaluated to satisfaction of instructor
16. Evaluated to satisfaction of instructor
17. Evaluated to satisfaction of instructor
18. Evaluated to satisfaction of instructor
19. Evaluated to satisfaction of instructor
20. Evaluated to satisfaction of instructor
21. Evaluated to satisfaction of instructor
22. Evaluated to satisfaction of instructor

MACHINERY ECONOMICS
UNIT VIII

UNIT OBJECTIVE

After completion of this unit, the cooperator should be able to determine methods of selecting machinery. This knowledge will be evidenced by completion of assignment sheets and unit test with a minimum of 85 percent accuracy.

SPECIFIC OBJECTIVES

After completion of this unit, the cooperator should be able to:

1. Match terms associated with machinery economics to the correct definitions.
2. State purposes of machinery management.
3. State factors to consider when selecting machinery and equipment.
4. Match kinds of fixed costs involved in owning machinery to the correct definitions.
5. Apply the rule for estimating annual fixed costs of machinery as a percent of purchase costs.
6. List kinds of variable costs involved in operating machinery.
7. Apply the rule for determining repair costs.
8. Apply the rule for determining fuel and lubrication costs.
9. Apply the rule for determining the theoretical capacity of a machine.
10. State general rules that affect field efficiency.
11. Apply the rule for estimating required effective field capacity for a machine to perform a specific function.
12. Apply the rule for determining machinery labor costs per acre.
13. State characteristics of timeliness costs.
14. Select from a list characteristics of the relationship between cost and machine use.
15. Select from a list points to consider when deciding which machines to buy.
16. State factors that determine the size of equipment to buy.
17. Select from a list items considered in determining the number and size of tractors.

18. Distinguish between the advantages and disadvantages of two-wheel drive tractors.
19. Distinguish between advantages and disadvantages of four-wheel drive tractors.
20. State types of break-even analyses which may be performed before choosing machinery.
21. List alternatives to sole ownership and use.
22. Distinguish between advantages and disadvantages of custom service.
23. Compute machinery costs.
24. Use partial budgeting in the machinery selection process.
25. Determine cost calculations on Oklahoma State University Enterprise Budgets.
26. Compute equipment width to match tractor horsepower.
27. Compute future use costs to determine when to trade for new machine.
28. Compute custom rates.

MACHINERY ECONOMICS
UNIT VIII

SUGGESTED ACTIVITIES

I. Suggested activities for instructor:

A. Provide each cooperator with objective sheet.

B. Provide each cooperator with information and assignment sheets.

C. Discuss unit and specific objectives.

D. Discuss information and assignment sheets.

E. Discuss the Oklahoma State University computerized program for calculating machinery costs. These programs are available from the Oklahoma State University Agriculture Economics Department, Oklahoma Cooperative Extension, or your local Area Extension Farm Management specialist.

F. Use motivational statements or questions to introduce the unit.

Examples: Brainstorm answers to the question "What is machinery management?"

Discuss the statement "Profit and good management go hand in hand. Profit depends on the kind of management used on the farm resources of land, labor and capital. Farm machinery is one of the many forms of capital used by farmers. Good management practices in machine ownership and use are necessary for profits from the farm business. The purpose of this unit is to explain what machinery management is; why it is important; and to provide data to help you solve the problems of selecting and trading farm machinery";

Discuss the statement "Many non-farmers have said 'Most farmers have more equipment than they need'."

Brainstorm answers to the question "How do you determine the size equipment you can justify for your farm?"

G. Give test.

H. Critique test.

I. Reteach, if necessary.

II. Instructional materials:

A. Objective sheet

B. Information sheet

C. Assignment sheets

1. Assignment Sheet #1--Compute Machinery Costs
2. Assignment Sheet #2--Use Partial Budgeting in the Machinery Selection Process
3. Assignment Sheet #3--Determine Cost Calculations on Oklahoma State University Enterprise Budgets
4. Assignment Sheet #4--Compute Equipment Width to Match Tractor Horsepower
5. Assignment Sheet #5--Compute Future Use Costs to Determine When to Trade for New Machine
6. Assignment Sheet #6--Compute Custom Rates

D. Answers to assignment sheets

E. Test

F. Answers to test

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MACHINERY ECONOMICS
UNIT VIII

INFORMATION SHEET

I. Terms and definitions

A. Machinery management--Making and implementing decisions in all aspects of acquiring and using machines

Examples: Selection; replacement; maintenance; operation; leasing; renting

B. Machinery investment--Undepreciated balance of all items of machinery and equipment

(NOTE: Actual market value might be more accurate; however, undepreciated balance is more easily determined and should be close to market value if a realistic method of depreciation and salvage value is used.)

C. Fixed costs--Outlays which do not vary with machine use

(NOTE: Fixed costs also may be known as *ownership* or *overhead costs.*)

D. Variable costs--Outlays that vary as a result of increasing or decreasing the hours of use a machine is subjected to

(NOTE: Variable costs also may be known as *operating expenses* or *out-of-pocket costs.*)

E. Timeliness--Ability to perform and complete an operation at or during the optimum time

F. Field efficiency--Percentage of theoretical field work accomplished after deducting losses which result from failure to use full width of the machine, turning, and idle travel at the ends of rows, clogging, adjusting seed or fertilizer, unloading harvested crops, machine adjustments, minor repairs, lubrication, and other minor interruptions

G. Drawbar horsepower--Power transmitted to the implement by the tractor

(NOTE: Maximum drawbar horsepower in the Nebraska Tractor Test will average 85% of maximum power take off [pto] horsepower.)

H. Theoretical capacity--Rate, in acres per hour, that a machine is working, when no time is lost due to turns, unused width, stopping, plugging, and breakdowns

(NOTE: Machine performs its functions 100 percent of the time it is in the field.)

INFORMATION SHEET

II. Purposes of machinery management

- A. To adjust costs of production and/or profits
- B. To improve field efficiency
- C. To provide information to help develop long-run farm plans
- D. To complete more work with available time
- E. To reduce labor input
- F. To evaluate capital investment

III. Factors to consider when selecting machinery and equipment

- A. Adaption of machine to needs

  (NOTE: Consider size, attachments, and simplicity of design.)
- B. Reliability of manufacturer
- C. Parts and service available from dealer
- D. Price and quality of machine
- E. Availability of fuel used on engine-driven machines
- F. Ease of making adjustments and minor repairs
- G. Design and neatness of appearance
- H. Added investment should be offset by reducing the required labor or permitting the labor to be used more productively
- I. Resale or salvage value

IV. Kinds of fixed costs involved in owning machinery (Assignment Sheets #1, #2, and #3)

- A. Depreciation--Decline in value resulting from age, obsolescence, and wear

  (NOTE: The straight-line method is used to compute average depreciation costs. Depreciation (annual) is computed as

  $$\frac{\text{Purchase price - Salvage value}}{\text{Number of years of use}}$$

  As a rule of thumb, depreciation costs over the life of a machine average about seven to 15 percent annually of the value of a new machine.)

INFORMATION SHEET

B. Interest on investment--Annual interest charge on the unrecovered cost of machinery

(NOTE: Even though the capital used may not have been borrowed, interest charges should be given consideration because this capital could be invested elsewhere. Interest (annual) is computed as

$$\frac{\text{Purchase price + salvage value}}{2} \times \text{Annual interest rate}$$

C. Insurance--Means of shifting risk of uncertain events, at a cost, from you to someone else specializing in taking risks

(NOTE: A charge for insurance should be made whether the operator or an insurance company carries the risk. Insurance may be expressed as a percentage of average machinery investment. If other data is not available to indicate otherwise, a rate of .6% may be used.)

D. Taxes--Charge, usually of money, imposed by authority upon property for public purposes

(NOTE: An annual charge of 1% of purchase price of the machine is usually appropriate. Where an individual lives may make a great deal of difference due to local tax rates.)

E. Machinery shelter--Shelter which covers or affords protection to machinery

(NOTE: Machinery shelter increases machine life, reduces repairs, betters appearance, and provides greater convenience when working on the machine. Annual costs will average 1 to 2% of the average machinery investment. Machinery shelter is usually not considered in Oklahoma. If shelter is considered the cooperator should adjust the repair tables downward 1 or 2%.)

INFORMATION SHEET

V. Estimating annual fixed costs of machinery as a percent of purchase costs

A. Annual fixed costs

(List price of machinery) x (Total estimated annual fixed costs expressed as a percent of new value) = Annual fixed costs

Example: Estimated annual fixed costs of machinery as a percent of purchase cost based on a 10 year life

COST OF ITEM	ANNUAL COSTS (PERCENT OF NEW VALUE)
Depreciation	9.0%
Interest	6.4%
Insurance	0.6%
Taxes	1.0%
Machinery shelter	0.0%
TOTAL estimated annual fixed costs	17.0%

Therefore, a $25,000.00 tractor will have estimated annual fixed costs of:

$$\$25,000.00 \times \frac{17.0\%}{100} = \$4,250.00$$

(NOTE: Machinery kept less than ten years will have higher annual fixed costs due to higher depreciation and taxes during the early years of the machine's life.)

B. Annual fixed costs per acre

$$\frac{\text{Annual fixed costs}}{\text{Acres of annual use}} = \text{Annual fixed costs per acre}$$

C. Annual fixed costs per hour

$$\frac{\text{Annual fixed costs}}{\text{Hours of annual use}} = \text{Annual fixed costs per hour}$$

VI. Kinds of variable costs involved in operating machinery (Assignment Sheets #1, #2, and #3)

A. Repairs and maintenance

(NOTE: Repair costs normally rise with increased usage of the machine. Estimation of repair costs for identical machines used the same number of hours is difficult to determine because of variances in work, management, how the individual handles the machinery, level of maintenance, operating conditions, nature of work done, and local costs for parts and labor. Excessive repair costs may be traced to overloading, too much speed, poor maintenance, or abuse of machinery and equipment. Once the expected useful life of a machine is reached, repair costs increase.)

INFORMATION SHEET

B. Fuel and lubrication

(NOTE: Fuel and lubrication costs are related to the number of hours the engine is operated, level of power output, and amount of fuel consumed per hour.)

C. Machinery labor hours

(NOTE: Machinery labor hours relate to tractor and implement time.)

D. Dependability

(NOTE: Dependability costs arise when machinery is broken down. These are not repair costs, but returns foregone by not being able to complete the operation at hand on time. These costs are extremely difficult to measure because they vary with type of operation performed, crop in question, and whether or not alternative machinery is available to do the work. The cooperator's subjective evaluation of reliability should influence decisions with respect to individual machinery.)

VII. Determining repair costs

A. Repair costs per hour

$$\frac{\text{Initial list price}}{1{,}000} \times \text{(Accumulated repair cost factor per \$1,000 of initial list price)}$$

Farm Equipment Maintenance and Repair Costs per $1,000 of Initial List Price

	One-Half Expected Service Life		Total Expected Service Life	
Machine	Hours	Cost/Hr. per $1,000	Hours	Cost/Hr. per $1,000
Tractor	5,000	$.06	10,000	$.09
Plow	1,000	.33	2,000	.40
Disks, chisel plow, field cultivator	1,000	.19	2,000	.33
Fertilizer equipment	500	.70	1,000	.93
Planter, drill	500	.49	1,000	.75
Sprayer, mounted	500	.59	1,000	.78
Sprayer, self-propelled	1,000	.30	2,000	.40
Baler[1], forage harvester, ensilage blower	1,000	.33	2,000	.40
Rake, conditioner	1,000	.28	2,000	.37
Mower	500	1.46	1,000	1.80
Combine, self-propelled	1,000	.10	2,000	.17
Corn head	1,000	.38	2,000	.50
Cotton picker, self-propelled	1,000	.25	2,000	.38
Cutter, rotary	1,000	.23	2,000	.30
Peanut combine[2]	1,000	.33	2,000	.40
Peanut digger-shaker[2]	1,000	.33	2,000	.40
Wagon and box	2,000	.14	4,000	.18

1/ Costs for wire or twine not included

2/ Estimates based on machinery records

Adapted with permission of Deere and Company, Technical Services, FMO *Machinery Management* by Wendell Bowers, copyright 1975, and with permission of the American Society of Agricultural Engineers, Agricultural Machinery Management Data, ASAE D230.3, rev. December 1977. Complete data is available from ASAE, St. Joseph, Michigan.

INFORMATION SHEET

Example: The estimated hourly repairs and maintenance costs over the expected service life of a tractor purchased for $25,000.00 would be:

$$\frac{\$25{,}000}{1{,}000} \times \$.09 = \$2.25 \text{ per hour}$$

B. Repair costs per acre

$$\frac{\text{Repair costs per hour}}{\text{Acres per hour}} = \text{Repair costs per acre}$$

VIII. Determining fuel and lubrication costs (Assignment Sheets #1, #2, and #3)

(NOTE: The table below is used to estimate fuel and lubrication costs. Fuel costs is a net price after average tax refund. The multiplier factor given below can be used to estimate fuel and lubricant cost. Multiply engine horsepower by the appropriate factor to determine usage, then multiply use by fuel price per gallon to find cost. Use PTO horsepower when multiplying engine horsepower for a tractor.

Estimated fuel use; Gallons per hour per horsepower

FUEL TYPE	Gasoline	Diesel	LP Gas
FUEL ONLY	0.068	0.048	0.080
FUEL AND LUBRICANTS	0.078	0.055	0.092

Fuel and lubricant factors are 15% larger than for fuel to account for additional cost of lubricants and filters. Multiply the equivalent consumption by the fuel cost to get total costs.)

A. Fuel costs per hour

(PTO horsepower) x (Table factor for fuel only) x (Fuel costs) = Fuel costs per hour

(NOTE: Engine may be used in place of PTO horsepower.)

B. Lubrication costs per hour

(Fuel costs per hour) x (15%) = Lubrication costs per hour

C. Fuel and lubrication costs per hour

(PTO horsepower) x (Table factor for fuel and lubricants) x (Fuel cost) = Fuel and lubrication costs per hour

Example: The average hourly fuel and lubrication costs for a 210 horsepower tractor, if diesel fuel cost is $1.25 per gallon, would be

(210 h.p.) x (.055) x ($1.25) = $14.4375 per hour

Chart in VIII used with permission of Oklahoma State University, Fact Sheet 1704, Stillwater, Oklahoma.

INFORMATION SHEET

IX. Determining the theoretical capacity of a machine (Assignment Sheets #1, #2, and #3)

$$\frac{(\text{Speed}) \times (\text{Width})}{8.25} = \text{Theoretical capacity}$$

Speed is measured by m.p.h. (miles per hour) and width in feet; hence, theoretical capacity is in acres per hour

(NOTE: 8.25 represents a conversion factor which permits one to multiply m.p.h. times width and come out with acres per hour

$$\frac{\text{43,560 sq. ft. per acre}}{\text{5,280 ft. per mile}} = 8.25.)$$

Example: The theoretical capacity of a 16-foot combine traveling 3 m.p.h. is

$$\frac{(\text{3 m.p.h.}) \times (\text{16 feet})}{8.25} = \text{5.81 acres per hour}$$

$$\text{(NOTE: Speed (miles per hour)} = \frac{\text{Distance traveled (feet)}}{\text{Time (minutes)} \times 88}.)$$

X. General rules that affect field efficiency

A. A normal turn at the end of row should be made with one continuous motion

B. When space at end of row is too narrow for a complete turn and requires backing for completion, as much as 50 percent more time is needed

C. If there is not any space at the end of row for a turn and the entire operation must be completed by backing, turning time may be two and one-fourth times that of a normal turn

D. Operators may increase field efficiencies by 10 percent or more by simply trying to eliminate unnecessary time the implement is down at the end of a furrow or row

E. Other increases include 11 percent for rough field conditions, 29 percent for obstructions, and 25 percent for ditches

INFORMATION SHEET

XI. Estimating required effective field capacity for a machine to perform a specific function (Assignment Sheet #1)

$$\frac{(\text{Speed}) \times (\text{Width})}{8.25} \times \frac{\text{Field efficiency}}{100} = \begin{array}{c}\text{Effective field capacity} \\ \text{(in acres per hour)}\end{array}$$

(NOTE:

Operating Speeds and Field Efficiency Range of Selected Equipment

Item	Speed (mph)	Efficiency (percent)
Moldboard plow	3.5-6	70-90
Tandem disk	3-6	70-90
Offset, or heavy disk	3-6	70-90
Chisel plow	4-6.5	70-90
Subsoiler-bedder	3-5	70-90
Rotary hoe	5-10	70-90
Planter	3-6	50-85
Field cultivator	3-8	70-90
Row crop cultivator:		
Shallow	2-5.5	70-90
Deep	1.5-3	70-90
Anhydrous ammonia appl.	3-5	60-75
Sprayer	3-5	50-80
Hay conditioner	5-7	75-85
Mower-conditioner	4-6	60-85
Hay baler	3-10 tons per hr.	60-85
Combine, small grain	2-4	65-80
Combine, peanut	2-4	65-80
Cotton picker, SP	----	60-75

Adapted with permission of the American Society of Agricultural Engineers, Agricultural Machinery Management Data, ASAE D230.3, rev. December 1977. Complete data is available from ASAE, St. Joseph, Michigan.

Example: The effective field capacity for 6-16" bottom moldboard plow traveling 4 m.p.h. with an 80% field efficiency is

$$\frac{(4) \times (8)}{8.25} \times \frac{80\%}{100} = \frac{[(4) \times (8)] \times .80}{8.25} = 3.10 \text{ acres per hour}$$

INFORMATION SHEET

XII. Determining machinery labor costs per acre (Assignment Sheet #3)

A. Calculate implement hours

$$\frac{1}{\text{Speed (m.p.h.)} \times \text{Width (feet)} \times \text{Efficiency (decimal)}/8.25} = \text{Implement time (hours per acre)}$$

Example: Implement time for a 16-foot tandem disk traveling at 5 m.p.h. with an 80 percent field efficiency is:

$$\frac{1}{5 \times 16 \times .80/8.25} = \frac{1}{7.76} = .129 \text{ hours per acre}$$

B. Calculate tractor time

Implement hours x 1.1 = Tractor time (hours per acre)

(NOTE: An additional 10 percent factor is used to account for indirect or nonfield use of tractor.)

Example: Tractor time for 16-foot tandem disk used in the "A" example above

.129 (hours per acre) x 1.1 = .1419 hours per acre

C. Calculate labor hours

1. If tractor drawn implement:

Tractor time x 1.1 = Labor hours (hours per acre)

Example: Tractor time for 16-foot tandem disk is .1419 hours per acre

.1419 x 1.1 = .156 labor hours per acre

2. If self-propelled equipment:

Implement hours x 1.2 = Labor hours (hours per acre)

Example: Implement hours for a 16-foot self-propelled combine is .257 hours per acre

.257 x 1.2 = .308 Labor hours per acre

D. Calculate acres per hour

$$\frac{1}{\text{Labor hours}} = \text{Acres per hour}$$

Example: Acres per hour of a tractor pulling a 16-foot tandem disk with a tractor time of .156 hours per acre is

$$\frac{1}{.156} = 6.41 \text{ acres per hour}$$

INFORMATION SHEET

E. Determine labor costs per acre

$$\frac{\text{Labor costs per hour}}{\text{Acres per hour}} = \text{Labor costs per acre}$$

(NOTE: When the machine is operated by the owner, the wage rate used should equal the earnings which could be earned by the cooperator working elsewhere doing comparable work.)

Example: Labor costs per acre for using a 16-foot disk covering 6.41 acres per hour with a labor cost of $4.00 per hour is

$$\frac{\$4}{6.41} = \$.624 \text{ per acre}$$

XIII. Characteristics of timeliness costs

A. Have economic value

Examples: Late planting or reducing harvest yields

B. Will show up as time losses due to servicing, loading, unloading, unplugging, and turning

(NOTE: Timeliness is readily apparent at harvest and during tillage operation. Costs are extremely difficult to pinpoint because costs vary between crops, operations performed, and weather patterns. Generally, the optimum machine capacity balances the low capital outlay for small machines with timely operation advantages of large machines [large capital outlays] for maximum net returns.)

XIV. Characteristics of the relationship between cost and machine use

A. Machine costs are highly correlated to the extent of machine use

B. As machine use is increased, total cost is increased; however, average cost will decrease, reach a minimum, and increase again

C. Average costs initially decline as use increases because fixed costs are spread over more units of work

(NOTE: At some points, average costs begin to increase because of increasing repair and dependability costs.)

XV. Points to consider when deciding which machines to buy

(NOTE: Selection of farm machinery may involve large capital outlays. Consider the following items when selecting machines.)

A. Will the machine do the job satisfactorily?

B. Does the machine fit into the present system or must other equipment be purchased?

INFORMATION SHEET

C. Is capacity sufficient to accomplish major operations without timeliness losses?

D. Are initial costs prohibitive and annual hourly use so low the machine will be obsolete before costs are minimized?

E. Would a used machine do the job adequately at less cost?

XVI. Factors that determine the size of equipment to buy (Assignment Sheet #4)

A. Size and type of farming operation

B. Soil type and topography

C. Labor available

D. Capital available

E. Skill of the operator

F. Number of days in the season available to use this machine

XVII. Items considered in determining the number and size of tractors

A. The main objective of the selection process is to get the desired work done on time with the lowest cost

Examples: Total working time availability; capacity in acres per hour to get the job done within time constraints; size of implements needed; proper sized tractor; total annual use for the main power unit

B. Variations in total working time needed to complete field operations

Example: Planting operations must be carried out in a fairly narrow time frame for maximum yield. On the other hand, plowing may be carried out over a longer period of time without serious consequences

C. Machinery implements must be accurately matched to tractor

Example: Heavy duty implements are needed to withstand extra loads of larger tractors. Implements must be pulled at the best field speed to give desired results (4 to 5-1/2 m.p.h.) and the tractor must not be overloaded

XVIII. Advantages and disadvantages of two-wheel drive tractors

A. Advantages

1. Has a wide variety of sizes and types available
2. Has a good selection of equipment to match with other tractors
3. Has lower cost per horsepower

INFORMATION SHEET

   4. Is well-suited to row crops and general farming
   5. Has the most economical power in smaller sizes

B. Disadvantages

   1. Has traction and ballasting problems with large units
   2. Is restricted to smaller units, meaning higher labor costs due to more hours
   3. Has a limit on size from a practical standpoint
   4. Has traction problems with high draft tools

XIX. Advantages and disadvantages of four-wheel drive tractors

A. Advantages

   1. Provides means for increased capacity
   2. Saves labor
   3. Gets important jobs done quicker
   4. Has better ballasting for traction
   5. Is well-suited to high draft tools

B. Disadvantages

   1. Needs high capital outlay
   2. May have high individual repair bills
   3. Has limited selection of size and type
   4. Has concentration of risk for critical operation
   5. Needs special hitches
   6. Is not well-suited for row crops or irrigation farming

XX. Types of break-even analyses which may be performed before choosing machinery (Assignment Sheet #5)

A. Comparing costs of machines

Example: Given the following figures break-even acreage is calculated as follows. Two combines are compared on an 18-foot model (Machine A) and a 16-foot model (Machine B). Cost for Machine A is $64,680.00; Machine B costs $62,489.00. Annual fixed costs for Machine A are $15,767.00, variable costs are $8.76/acre. Annual fixed costs for Machine B are $15,233.00, variable costs are $9.02/acre. The following formula may be used for calculating breakeven acreage:

INFORMATION SHEET

$$\frac{\text{FIXED COST MACHINE A}}{\text{NO. ACRES}} + \text{VARIABLE COSTS MACHINE A} = \frac{\text{FIXED COSTS MACHINE B}}{\text{NO. ACRES}} + \text{VARIABLE COSTS MACHINE B}$$

$$\frac{\$15,767.00}{N} + \$8.76 = \frac{\$15,233.00}{N} + \$9.02$$

$$\frac{\$15,767.00}{N} - \frac{\$15,233.00}{N} + \$8.76 = \frac{\$15,233.00}{N} - \frac{\$15,233.00}{N} + \$9.02$$

$$\frac{\$534}{N} + \$8.76 - \$8.76 = \$9.02 - \$8.76$$

$$\frac{534}{N} = .26$$

$$N = 2053.85$$

Below 2053.85 acres, the smaller machine will be most economical; above 2053.85 acres, the larger machine is more economical

B. Comparing break-even hours of use for gasoline and diesel tractors

Example: Given the following information, an analysis may be performed. Two used tractors, same model, same year, one gasoline and one diesel, are available. The diesel costs $1,500 more. Looking at various figures comparing fixed costs of used diesel and gasoline engines, you have determined it will cost 11% additional annual fixed cost if you purchase the diesel tractor. Using the fuel and lube factors and fuel prices of $1.25 per gallon for diesel and $1.35 per gallon for gasoline, you calculated an hourly fuel cost of $5.11 for the diesel and $6.63 for the gasoline tractor.

$$\frac{\text{Extra diesel costs times fixed cost percentage}}{\text{Gasoline fuel costs per hour - Diesel fuel costs per hour}} = \text{Average Annual Use}$$

$$= \frac{\$1,500 \times .11}{6.63 - 5.11} = \frac{\$165}{\$1.52} = 108.55 \text{ hours annually}$$

If you operate the tractor more than 108.55 hours annually you would save money with the diesel.

XXI. Alternatives to sole ownership and use

A. Custom work

(NOTE: Custom work may be desirable if the acreages involved are too small to justify owning equipment or if the individual has more acres than are workable with currently owned equipment. Comparisons can be made using the individual's own costs per acre compared to the custom rate per acre.)

INFORMATION SHEET

B. Used machinery

(NOTE: Used machinery is desirable if the individual wants to reduce cash outflows and interest costs. The ability to correctly evaluate used machinery condition and the individual's own mechanical ability to maintain used machinery are crucial points to evaluate in used machinery selection. Average costs per hour may be used as an analysis starting point. If the used machine is thought to be reliable, efficient, and appears to have no other deficiencies other than normal wear and obsolescence, buying the machine would be favored if there is not a large mark-up on the "as is" value for the age of the machine.)

C. Joint ownership of machinery

(NOTE: Joint ownership of machinery may be desirable if the size of the farm does not warrant ownership of larger more expensive machinery. Ownership costs would be shared according to the degree of ownership and operating expenses would be shared in proportion to the amount of usage. Items to be considered when considering joint ownership of machinery should include integrity of both cooperators which should be extremely high. There should be a written understanding of how repair costs will be made and how costs will be distributed. Average ownership costs should be determined. Schedule of ownership cost should be agreed upon and used. Costs for fuel and labor should be assumed by the cooperator who uses the machine for that period of time. A schedule of maintenance should be set up and strictly adhered to; schedules for the use of the machine should be determined in advance.)

D. Leasing

(NOTE: Leasing may be desirable for the beginning or for the smaller cooperator who would like to have a greater degree of control over costs incurred. Financial leasing allows the producer to use the machine for a specific period of time. The producer makes an annual payment on the machine, makes repairs on the machine, and houses the machine; operating leases are for a period of one to three years. The cooperator makes an annual payment and houses the machine. Cooperators do not pay for normal repairs, only those caused by negligence.)

XXII. Advantages and disadvantages of custom service (Assignment Sheet #6)

A. Advantages

1. Ownership costs are eliminated
2. Capital can be invested in other enterprises
3. Annual machinery costs can be varied to suit weather, yield, and market conditions of individual years
4. There may be benefits from newer machinery, a skilled operator, and less time required

INFORMATION SHEET

B. Disadvantages

1. Service may not be available when job is ready
2. Annual costs may be higher than ownership cost
3. Labor released by hiring custom work may not be profitably used
4. Custom operators prefer large jobs and refuse or postpone small jobs
5. Custom operators are sometimes interested in acres rather than efficiency

MACHINERY ECONOMICS
UNIT VIII

ASSIGNMENT SHEET #1–COMPUTE MACHINERY COSTS

NAME________________________________ SCORE__________________

Farm machinery is costly to buy, own, and operate. An understanding of costs is basic to the process of managing machinery. Many of the costs are non-cash, and often are not taken into account when considering machinery ownership. Ownership of a piece of machinery obligates a cooperator to much of the total cost of ownership.

The time to consider the costs of a machine is before it is purchased.

PROBLEM:

You are considering buying a self-propelled combine with a 16-foot header costing $37,500.00. This is to be used exclusively for harvesting small grain. The manufacturer's list price is $42,500.00; the salvage value is $4,000.00. The diesel engine is rated at 100 horsepower. Net cost of diesel is $1.50 per gallon. The machine will be owned for 10 years and used 200 hours annually. Interest rate is 18.0%. The tax rate is 1.0 percent and the insurance rate is .6 percent. The annual cost for machinery shelter is 1.0 percent of the average value. Labor can be hired at a cost of $5.00 per hour. The operator plans to harvest the small grains traveling at 3 m.p.h. with 75 percent efficiency.

Using the machinery cost worksheet, and the given information and tables, compute the annual fixed costs, annual variable costs, total costs per hour, acres per hour, and costs per acre for operating the combine.

ASSIGNMENT SHEET #1

TABLE 1. **Farm Equipment Maintenance and Repair Costs per $1,000 of Initial List Price**

	One-Half Expected Service Life		Total Expected Service Life	
Machine	Hours	Cost/Hr. per $1,000	Hours	Cost/Hr. per $1,000
Tractor	5,000	$.06	10,000	$.09
Plow	1,000	.33	2,000	.40
Disks, chisel plow, field cultivator	1,000	.19	2,000	.33
Fertilizer equipment	500	.70	1,000	.93
Planter, drill	500	.49	1,000	.75
Sprayer, mounted	500	.59	1,000	.78
Sprayer, self-propelled	1,000	.30	2,000	.40
Baler[1], forage harvester, ensilage blower	1,000	.33	2,000	.40
Rake, conditioner	1,000	.28	2,000	.37
Mower	500	1.46	1,000	1.80
Combine, self-propelled	1,000	.10	2,000	.17
Corn head	1,000	.38	2,000	.50
Cotton picker, self-propelled	1,000	.25	2,000	.38
Cutter, rotary	1,000	.23	2,000	.30
Peanut combine[2]	1,000	.33	2,000	.40
Peanut digger-shaker[2]	1,000	.33	2,000	.40
Wagon and box	2,000	.14	4,000	.18

1/ Costs for wire or twine not included

2/ Estimates based on machinery records

Adapted with permission of Deere and Company, Technical Services, FMO *Machinery Management* by Wendell Bowers, copyright 1975, and with permission of the American Society of Agricultural Engineers, Agricultural Machinery Management Data, ASAE D230.3, rev. December 1977. Complete data is available from ASAE, St. Joseph, Michigan.

TABLE 2. ESTIMATED FUEL USE; GALLONS PER HOUR PER HORSEPOWER

FUEL TYPE	Gasoline	Diesel	LP Gas
FUEL ONLY	0.068	0.048	0.080
FUEL AND LUBRICANTS	0.078	0.055	0.092

* For tractor, use PTO Horsepower

**These factors are 15% larger than for fuel to account for additional cost of lubricants and filters. Multiply the equivalent consumption by the fuel cost to get total costs.

Used with permission of Oklahoma State University, Fact Sheet 1704, Stillwater, Oklahoma.

ASSIGNMENT SHEET #1

TABLE 3. Operating Speeds and Field Efficiency Range of Selected Equipment

Item	Speed (mph)	Efficiency (percent)
Moldboard plow	3.5-6	70-90
Tandem disk	3-6	70-90
Offset, or heavy disk	3-6	70-90
Chisel plow	4-6.5	70-90
Subsoiler-bedder	3-5	70-90
Rotary hoe	5-10	70-90
Planter	3-6	50-85
Field cultivator	3-8	70-90
Row crop cultivator:		
Shallow	2-5-5	70-90
Deep	1.5-3	70-90
Anhydrous ammonia appl.	3-5	60-75
Sprayer	3-5	50-80
Hay conditioner	5-7	75-85
Mower-conditioner	4-6	60-85
Hay baler	3-10 tons per hr.	60-85
Combine, small grain	2-4	65-80
Combine, peanut	2-4	65-80
Cotton picker, SP	----	60-75

Adapted with permission of the American Society of Agricultural Engineers, Agricultural Machinery Management Data, ASAE D230.3, rev. December 1977. Complete data is available from ASAE, St. Joseph, Michigan.

ASSIGNMENT SHEET #1

MACHINERY COST WORKSHEET

MACHINE______________________

A. Compute Annual Fixed Costs:

$$\text{Depreciation} = \frac{\text{(Purchase Price) - (Salvage Value)}}{\text{(Number of Years Used)}}$$

(1) DEPRECIATION = $\dfrac{(\$\_\_\_\_\_\_) - (\$\_\_\_\_\_\_)}{(\_\_\_\_)}$ = $______

$$\text{Annual Interest} = \frac{\text{(Purchase Price) + (Salvage Value)}}{(\ 2\ )} \times \text{Interest Rate}$$

(2) INTEREST = $\dfrac{(\$\_\_\_\_\_\_) + (\$\_\_\_\_\_\_)}{(\ 2\ )}$ X ______ = $______

$$\text{Insurance} = \frac{\text{(Purchase Price) + (Salvage Value)}}{(\ 2\ )} \times \text{Insurance Rate}$$

(3) INSURANCE = $\dfrac{(\$\_\_\_\_\_\_) + (\$\_\_\_\_\_\_)}{(\ 2\ )}$ X ______ = $______

Taxes = Purchase Price X Tax Rate

(4) TAXES = ($______) X ______ = $______

a. Annual Fixed Costs = (1) + (2) + (3) + (4) = $______

$$\text{Annual Fixed Costs per Hour} = \frac{\text{Annual Fixed Costs}}{\text{Hours Used Annually}}$$

b. ANNUAL FIXED COSTS PER HOUR = $\dfrac{(\$\_\_\_\_\_\_)}{(\_\_\_\_\_\_)}$ = $______/Hr.

B. Compute Annual Variable Costs:

$$\text{Repairs} = \frac{\text{(Initial List Price)}}{(\$1{,}000)} \times \text{Table 1 Factor}$$

(1) REPAIRS = $\dfrac{(\$\_\_\_\_\_\_)}{(\$1{,}000)}$ X $______ = $______/Hr.

Fuel = Engine or P.T.O. Horsepower X Table 2 Factor X Fuel Costs

(2) FUEL = ______ H.P. X 0.0 ______ X $______/gallon = $______/Hr.

Lubrication = Fuel Costs X 15 percent

(3) LUBRICATION = $______ X 0.15 = $______/Hr.

ASSIGNMENT SHEET #1

(4) LABOR = $________/Hr.

Annual Variable Costs per Hour = (1) + (2) + (3) + (4)

a. ANNUAL VARIABLE COSTS PER HOUR = $________/Hr.

C. Compute Total Costs:

Total Cost per Hour = Annual fixed costs per hour = Annual variable costs /Hr.

(1) TOTAL COSTS PER HOUR = $________ + $________ = $________/Hr.

D. Compute Acres per Hour:

$$\text{Effective Field Capacity} = \frac{\text{Speed (mph) X Width (feet)}}{8.25} \times \frac{\text{Field Efficiency (Table 3)}}{100}$$

$$\text{(1) ACRES PER HOUR} = \frac{\_\_\_\_\text{(mph) X}\_\_\_\_\text{(feet)}}{8.25} \times \frac{\_\_\_\_}{100} = \$\_\_\_\_\text{Acres/Hr.}$$

E. Compute Costs per Acre:

$$\text{Costs per Acre} = \frac{\text{Costs per Hour}}{\text{Acres per Hour}}$$

$$\text{(1) COSTS PER ACRE} = \frac{(\$\_\_\_\_\_\_\_\_)}{(\$\_\_\_\_\_\_\_\_)} = \$\_\_\_\_\_\_\_\_\text{/Acre}$$

(NOTE: If more than one item of equipment is used in an operation, such as a tractor and associated equipment, use separate worksheets to calculate the cost for each item.)

ASSIGNMENT SHEET #1

MACHINERY COST WORKSHEET

MACHINE______________________

A. Compute Annual Fixed Costs:

$$\text{Depreciation} = \frac{\text{(Purchase Price) - (Salvage Value)}}{\text{(Number of Years Used)}}$$

(1) DEPRECIATION = $\dfrac{(\$\qquad) - (\$\qquad)}{(\qquad)}$ = $________

$$\text{Annual Interest} = \frac{\text{(Purchase Price) + (Salvage Value)}}{(\ 2\ )} \times \text{Interest Rate}$$

(2) INTEREST = $\dfrac{(\$\qquad) + (\$\qquad)}{(\ 2\ )}$ X ________ = $________

$$\text{Insurance} = \frac{\text{(Purchase Price) + (Salvage Value)}}{(\ 2\ )} \times \text{Insurance Rate}$$

(3) INSURANCE = $\dfrac{(\$\qquad) + (\$\qquad)}{(\ 2\ )}$ X ________ = $________

Taxes = Purchase Price X Tax Rate

(4) TAXES = ($) X ________ = $________

a. Annual Fixed Costs = (1) + (2) + (3) + (4) = $________

$$\text{Annual Fixed Costs per Hour} = \frac{\text{Annual Fixed Costs}}{\text{Hours Used Annually}}$$

b. ANNUAL FIXED COSTS PER HOUR = $\dfrac{(\$\qquad)}{(\qquad)}$ = $________/Hr.

B. Compute Annual Variable Costs:

$$\text{Repairs} = \frac{\text{(Initial List Price)}}{(\$1{,}000)} \times \text{Table 1 Factor}$$

(1) REPAIRS = $\dfrac{(\$\qquad)}{(\$1{,}000)}$ X $________ = $________/Hr.

Fuel = Engine or P.T.O. Horsepower X Table 2 Factor X Fuel Costs

(2) FUEL = ________ H.P. X 0.0 ________ X $________/gallon = $________/Hr.

Lubrication = Fuel Costs X 15 percent

(3) LUBRICATION = $________ X 0.15 = $________/Hr.

ASSIGNMENT SHEET #1

(4) LABOR = $______/Hr.

Annual Variable Costs per Hour = (1) + (2) + (3) + (4)

a. ANNUAL VARIABLE COSTS PER HOUR = $______/Hr.

C. Compute Total Costs:

Total Cost per Hour = Annual fixed costs per hour = Annual variable costs /Hr.

(1) TOTAL COSTS PER HOUR = $______ + $______ = $______/Hr.

D. Compute Acres per Hour:

$$\text{Effective Field Capacity} = \frac{\text{Speed (mph) X Width (feet)}}{8.25} \times \frac{\text{Field Efficiency (Table 3)}}{100}$$

(1) $\text{ACRES PER HOUR} = \dfrac{\_\_\_\_\text{(mph) X }\_\_\_\_\text{(feet)}}{8.25} \times \dfrac{\_\_\_\_}{100}$ = $______Acres/Hr.

E. Compute Costs per Acre:

$$\text{Costs per Acre} = \frac{\text{Costs per Hour}}{\text{Acres per Hour}}$$

(1) COSTS PER ACRE = $\dfrac{(\$\_\_\_\_\_\_)}{(\$\_\_\_\_\_\_)}$ = $______/Acre

(NOTE: If more than one item of equipment is used in an operation, such as a tractor and associated equipment, use separate worksheets to calculate the cost for each item.)

MACHINERY ECONOMICS
UNIT VIII

ASSIGNMENT SHEET #2--USE PARTIAL BUDGETING IN THE MACHINERY SELECTION PROCESS

NAME______________________________ SCORE__________________

As an enterprising cooperator, you've decided to draw on past learning experiences and use a partial budget in the machinery selection process. The following information is assumed to be relevant to your situation.

Read the information, do the needed calculations, and decide what you, the cooperator, should do.

You are a wheat producer in northwestern Oklahoma and have been having wheat cut by a custom operator in the area. The following costs are considered to be relevant. Using the partial budget form on the following page, decide whether or not to continue with custom cutting or purchase your own combine.

ADDITIONAL COSTS:

Fixed costs . . . . $8.96 per acre

(NOTE: This includes depreciation, taxes, interest, and insurance.)

Variable costs . . . . $4.40 per acre

(NOTE: This includes repair and maintainance, and fuel and lube costs.)

Hauling . . . . $2.76 per acre (23 bu./acre @ $0.12/bu.)

Labor . . . . $7.20 per acre (1.8 hours @ $4.00/hour)

REDUCED RETURNS:

Opportunity costs $0.00

ADDITIONAL RETURNS:

3 additional bushels/acre by using your own combine @ $3.50/bushel = 10.50

(NOTE: By using a custom cutter, you only averaged 20 bushels per acre instead of 23 bushels per acre using your own combine, an increase of 3 bushels per acre.)

REDUCED COSTS:

Custom cutting . . . . $15.00 ($15.00/acre)

Custom hauling . . . . $3.00 (20 bu. @ 0.15/bu.)

ASSIGNMENT SHEET #2

SITUATION:

ADDITIONAL COSTS

ADDITIONAL RETURNS

REDUCED RETURNS

REDUCED COSTS

A. TOTAL ANNUAL ADDITIONAL COSTS AND REDUCED RETURNS

$ ______________________

B. TOTAL ANNUAL ADDITIONAL RETURNS AND REDUCED COSTS

$ ______________________

NET CHANGE IN INCOME (B minus A) $ ______________________

ASSIGNMENT SHEET #2

SITUATION:

ADDITIONAL COSTS

ADDITIONAL RETURNS

REDUCED RETURNS

REDUCED COSTS

A. TOTAL ANNUAL ADDITIONAL COSTS AND REDUCED RETURNS

$ ____________________

B. TOTAL ANNUAL ADDITIONAL RETURNS AND REDUCED COSTS

$ ____________________

NET CHANGE IN INCOME (B minus A) $ ____________________

MACHINERY ECONOMICS
UNIT VIII

ASSIGNMENT SHEET #3--DETERMINE COST CALCULATIONS ON OKLAHOMA STATE UNIVERSITY ENTERPRISE BUDGETS

NAME________________________________ SCORE__________________

Interpreting cost information from the Oklahoma State University Enterprise Budgets can sometimes be confusing. Cooperators often don't understand how figures are obtained. Using the following budget, calculate machinery cost information from hours of use and then point out where these figures are on the enterprise budget.

Using information on the chisel, calculate time, variable, fixed, labor and total costs per acre. Under the section entitled Machinery Fixed and Variable Costs per Hour (it is underlined) look for the line entitled "chisel." On the far right hand side under the HR/TIME column, note the figure 0.18

TIME REQUIREMENTS FOR CHISEL AND TRACTOR

Machine (chisel).	0.18
Tractor	0.18 x 1.1 = .198
Labor	.198 x 1.1 = .2178

Variable costs per acre are found by locating total variable costs for the chisel in the Machinery Fixed and Variable Costs Per Hour Section. Variable costs then are located for the tractor; both of these costs are found in the same section.

VARIABLE COST PER ACRE FOR CHISEL AND TRACTOR

Chisel	0.84 x .18 = $.151
Tractor	9.99 x .198 = $1.978
Total variable cost	$2.129; or $2.13 per acre

Fixed costs per acre may be calculated by locating the fixed cost column under Machinery Fixed and Variable Costs Per Hour section. Fixed cost must be determined for the chisel and the tractor. Interest must then be calculated for the chisel and tractor. These figures are obtained in the Interest section for Machinery Fixed and Variable Costs Per Hour

FIXED COSTS PER ACRE

Chisel	3.80 x .18 = $.684
Tractor	4.50 x .198 = $.891
Interest (chisel)	3.63 x .18 = $.653

ASSIGNMENT SHEET #3

FIXED COSTS PER ACRE (Continued)

d. Interest (tractor) . . . . 5.53 x .198 = $1.094

Total Fixed Costs $3.322 or $3.32 per acre

Total Labor Costs Per Acre

(NOTE: This is found by using this formula: Labor time requirement x wage rate.)

Example: .2178 x $4.00 = $.871 or $.87 per acre

TOTAL COSTS PER ACRE

Total fixed costs	3.32
Total variable costs	2.13
Total labor costs	0.87
Total costs	$6.32 per acre

These are all costs associated with a chisel and a tractor

PROBLEM:

Determine the total costs per acre associated with the offset disk and tractor (5) for preparing the ground in March. Calculate the following in the space provided below and on the next page:

a. Time requirements for offset disk and tractor

1) Offset disk =

2) Tractor =

3) Labor =

b. Variable costs per acre for offset disk and tractor

1) Offset disk =

2) Tractor =

Total Variable Costs =

ASSIGNMENT SHEET #3

c. Fixed costs per acre for offset disk and tractor

1) Offset disk =

2) Tractor =

3) Interest (offset disk) =

4) Interest (tractor) =

Total Fixed Costs =

d. Total labor costs per acre

e. Total costs per acre

1) Total fixed costs =

2) Total variable costs =

3) Total labor costs =

Total costs per acre =

ASSIGNMENT SHEET #3

```
IRRIGATED GRAIN SORGHUM - 18" WATER                                       73200127
SIDE-ROLL SYSTEM                                                          01/10/81
CUSTOM HARVEST                                                        NORTHCENTRAL
    ------------------------------------------------------------------------------
    OPERATING INPUTS:                  UNITS     PRICE  QUANTITY     VALUE YOUR VALUE


      GRAIN SORG SEED                  LBS.      0.550     9.000      4.95 __________
      PRE-MERGE HERB                   LBS.      5.000     2.500     12.50 __________
      NITROGEN (N)                     LBS.      0.210   115.000     24.15 __________
      N&P                              CWT.     13.500     1.000     13.50 __________
      PARATHION                        ACRE      5.000     1.000      5.00 __________
      CUSTOM COMBINE                   ACRE     20.000     1.000     20.00 __________
      CUSTOM HAULING                   CWT.      0.200    60.000     12.00 __________
      ANNUAL OPERATING CAPITAL         DOL.      0.150    27.750      4.16 __________
      LABOR CHARGES                    HR.       4.000     2.897     11.59 __________
      MACHINERY FUEL,LUBE,REPAIRS      ACRE                           9.07 __________
      IRRIGATION FUEL,LUBE,REPAIRS     ACRE                          25.56 __________

    TOTAL OPERATING COST                                            142.48 __________
    ------------------------------------------------------------------------------
    FIXED COSTS                                  VALUE YOUR VALUE


      MACHINERY
        INTEREST AT 15.0%              DOL.      8.170 __________
        DEPR.,TAXES,INSUR.             DOL.      7.528 __________
      IRRIGATION
        INTEREST AT 15.0%              DOL.     21.960 __________
        DEPR.,TAXES,INSUR.             DOL.     21.060 __________
      LAND
        INTEREST AT  0.0%              DOL.      0.0   __________
        TAXES                          DOL.      0.0   __________

    TOTAL FIXED COSTS                            58.72 __________
    ------------------------------------------------------------------------------
    PRODUCTION:                        UNITS     PRICE  QUANTITY     VALUE YOUR VALUE


      MILO                             CWT.      5.000    60.000    300.00 __________
      PASTURE                          AUMS      0.0       1.200      0.0  __________


    TOTAL RECEIPTS                                                  300.00 __________
    ------------------------------------------------------------------------------
    RETURNS ABOVE TOTAL OPERATING COSTS                             157.52 __________

    RETURNS ABOVE ALL COSTS EXCEPT
        OVERHEAD,RISK AND MANAGEMENT                                 98.80 __________
    ------------------------------------------------------------------------------
SIDE-ROLL SYSTEM                                                         SHARKEY
50 FT. WELL - 30 FT. LIFT, 320 G.P.M. - ELECTRIC - $.03/KWH
CUSTOM COMBINE - $14.00 PLUS $.15 CWT OVER 2,000#-CUSTOM01/13/81      0100000000

         PROCESSED BY DEPT. OF AGRI. ECON. - OKLAHOMA STATE UNIVERSITY
     PROGRAM DEVELOPED BY DEPT. OF AGRI. ECON. OKLAHOMA STATE UNIVERSITY
```

ASSIGNMENT SHEET #3

```
BUDGET IDENTIFICATION NUMBER  732001273122212        ANNUAL CAPITAL MONTH  9        BUDGET RECORD NUMBER 430
                                                                                       BUDGET FILE   1

IRRIGATED GRAIN SORGHUM - 18" WATER                                     73200127
SIDE-ROLL SYSTEM                                                        01/10/81
CUSTOM HARVEST                                                      NORTHCENTRAL

                        1     2     3     4     5     6     7     8     9    10    11    12      13      14     15   16    17   18
                       JAN   FEB   MAR   APR   MAY   JUN   JUL   AUG   SEP   OCT   NOV   DEC   PRICE  WEIGHT  UNIT ITEM TYPE CONT
                                                                                                               CODE CODE
LINE
PRODUCTION                                   NUMBER OF UNITS
  1 MILO               0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0  60.00  0.0   0.0   0.0  -1.000   0.0    16.  73.  2.   0.
  2 PASTURE            0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0  0.60  0.60   0.0  -1.000   0.0    10. 130.  2.   0.

                                                                                             PRICE  NUMBER UNIT ITEM TYPE CONT
OPERATING INPUTS                               RATE/UNIT                                            UNITS  CODE CODE
 11 GRAIN SORG SEED    0.0   0.0   0.0   0.0   9.00  0.0   0.0   0.0   0.0   0.0   0.0   0.0  -1.000   0.0    12. 173.  3.   0.
 12 PRE-MERGE HERB     0.0   0.0   0.0   0.0   2.50  0.0   0.0   0.0   0.0   0.0   0.0   0.0   5.000   0.0    12. 256.  3.   0.
 13 NITROGEN (N)       0.0   0.0   0.0   0.0 115.00  0.0   0.0   0.0   0.0   0.0   0.0   0.0  -1.000   0.0    12. 211.  3.   0.
 14 NSP                0.0   0.0   0.0   0.0   1.00  0.0   0.0   0.0   0.0   0.0   0.0   0.0  13.500   0.0    16. 212.  3.   0.
 15 PARATHION          0.0   0.0   0.0   0.0   1.00  0.0   0.0   0.0   0.0   0.0   0.0   0.0   5.000   0.0     7. 264.  3.   0.
 16 CUSTOM COMBINE     0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   1.00  0.0   0.0   0.0  20.000   0.0     7. 305.  3.   0.
 17 CUSTOM HAULING     0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0  60.00  0.0   0.0   0.0   0.200   0.0    16. 306.  3.   0.

                                                                                             XXXXX   XXXXX POWER MACH TYPE CONT
MACHINERY REQUIREMENTS                         TIMES OVER                                                  UNIT CODE
 38 OFFSET DISK        1.00  0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0     0.0     5.  37.  6.   0.
 39 CHISEL             0.0   1.00  0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0     0.0     5.  42.  6.   0.
 40 OFFSET DISK        0.0   0.0   1.00  0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0     0.0     5.  37.  6.   0.
 41 ANHYDROUS APPLIC   0.0   0.0   0.0   1.00  0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0     0.0     5.  60.  6.   0.
 42 SPRINGTOOTH        0.0   0.0   0.0   1.00  0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0     0.0     5.  55.  6.   0.
 43 PLANTER            0.0   0.0   0.0   0.0   1.00  0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0     0.0     3.  65.  6.   0.


 49 ACIN IRRIG WATER   0.0   0.0   0.0   0.0   0.0   3.00  6.00  6.00  3.00  0.0   0.0   0.0

---------------------------------------------------------------------------------------------------------------------------
                              MONTHLY SUMMARY OF RECEIPTS AND EXPENSES
      CATEGORY        UNIT    JAN    FEB    MAR    APR    MAY    JUN    JUL    AUG    SEP    OCT    NOV    DEC       TOTAL
TOTAL RECEIPTS        ACRE    0.0    0.0    0.0    0.0    0.0    0.0    0.0    0.0  300.00   0.0    0.0    0.0      300.00
TOTAL EXPENSES        ACRE    1.68   2.13   1.51   1.96  61.89   4.26   8.52   8.52  36.26   0.0    0.0    0.0      126.73
RETURNS TO LAND, LABOR, CAPITAL, MACHINERY, OVERHEAD, RISK, AND MANAGEMENT                                           173.27
---------------------------------------------------------------------------------------------------------------------------
---------------------------------------------------------------------------------------------------------------------------
ANNUAL CAPITAL        DOL.    0.13   0.31   0.45   0.61   5.76   6.12   6.83   7.54   0.0    0.0    0.0    0.0       27.75
---------------------------------------------------------------------------------------------------------------------------
                              LABOR REQUIREMENTS BY MONTH
MACHINERY LABOR       HR.     0.16   0.22   0.16   0.19   0.25   0.0    0.0    0.0    0.0    0.0    0.0    0.0        0.97
IRRIGATION LABOR      HR.     0.0    0.0    0.0    0.0    0.0    0.32   0.64   0.64   0.32   0.0    0.0    0.0        1.93
TOTAL LABOR           HR.     0.16   0.22   0.16   0.19   0.25   0.32   0.64   0.64   0.32   0.0    0.0    0.0        2.90
---------------------------------------------------------------------------------------------------------------------------
---------------------------------------------------------------------------------------------------------------------------
IRRIGATION WATER      INCH    0.0    0.0    0.0    0.0    0.0    3.00   6.00   6.00   3.00   0.0    0.0    0.0       18.00
---------------------------------------------------------------------------------------------------------------------------
                                                                                          TOTAL
                              MACHINERY FIXED AND VARIABLE COSTS PER HOUR
     MACHINE          CODE    DEPR     INSUR.      TAX    TOTAL FIXED  REPAIR     FUEL      LUB.   VARIABLE    INT.    HR/TIME
TRACTOR(3)              3     2.39      0.17      0.63       3.49       1.96      4.56      0.68     7.20      4.27     1.00
TRACTOR(5)              5     3.73      0.22      0.55       4.50       2.54      6.48      0.97     9.99      5.53     1.00
OFFSET DISK            37     6.07      0.27      0.76       7.10       1.45      0.0       0.0      1.45      5.78     0.13
CHISEL                 42     3.25      0.15      0.60       3.80       0.94      0.0       0.0      2.94      3.67     0.18
OFFSET DISK            37     6.07      0.27      0.76       7.10       1.65      0.0       0.0      1.65      5.78     0.13
ANHYDROUS APPLIC       60     4.24      0.21      0.60       5.05       1.12      0.0       0.0      1.12      5.50     0.09
SPRINGTOOTH            55     1.79      0.08      0.22       2.09       1.25      0.0       0.0      1.25      1.78     0.07
PLANTER                65     2.67      0.11      0.30       2.98       0.79      0.0       0.0      0.79      2.65     0.21
---------------------------------------------------------------------------------------------------------------------------

                      ITEM          TIMES  LABOR  MACHINE  FUEL,OIL,LUB.,  FIXED COSTS
   OPERATION          NO.    DATE   OVER   HOURS   HOURS   REPAIR PER ACRE   PER ACRE
---------------------------------------------------------------------------------------------------------------------------
OFFSET DISK           5,37   JAN    1.00   0.157   0.129       1.61           3.23
CHISEL                5,42   FEB    1.00   0.217   0.180       2.13           3.32
OFFSET DISK           5,37   MAR    1.00   0.157   0.129       1.61           3.23
ANHYDROUS APPLIC      5,60   APR    1.00   0.111   0.092       1.11           2.02
SPRINGTOOTH           5,55   APR    1.00   0.092   0.067       0.83           1.02
PLANTER               3,65   MAY    1.00   0.248   0.205       1.22           2.28
     TOTAL                                 0.971   0.803       9.07          15.10
---------------------------------------------------------------------------------------------------------------------------
        COLUMN          1      2       3       4      5      5        7        8      9      10      11     12       13     14    15     16
NAME OF MACHINE       CODE  WIDTH  INITIAL   SPEED  FIELD   RC1      RC2      RC3   HOURS  YEARS    RFV1   RFV2  PURCHASE  FUEL  HOURS   HP
                           (FEET)   LIST     (MPH)  EFFIC-                          USED   OWNED                  PRICE    TYPE   OF
                                    PRICE           ENCY                          ANNUALLY                                       LIFE
TRACTOR(3)              3.   95.0  29500.    4.5   0.88   1.25  0.000631   1.63   600.   10.0   0.680  0.920   25753.    1.  12000.   95.
TRACTOR(5)              5.  135.0  37030.    4.5   0.88   1.25  0.000631   1.63   600.   10.0   0.680  0.920   33303.    1.  12000.  135.
OFFSET DISK            37.   16.0   8400.    4.8   0.83   0.60  0.000251   1.80   100.   10.0   0.630  0.985    7563.    0.   2000.    0.
CHISEL                 42.   14.0   6500.    4.1   0.80   0.65  0.000251   1.80   100.   10.0   0.630  0.985    6353.    0.   2000.    0.
SPRINGTOOTH            55.   33.0   4300.    5.3   0.70   0.65  0.000251   1.80   175.   10.0   0.630  0.985    3970.    0.   2000.    0.
ANHYDROUS APPLIC       60.   25.0   9000.    4.5   0.90   0.65  0.000251   1.80   100.   10.0   0.630  0.885    6303.    0.   2000.    0.
PLANTER                65.   12.0   1830.    5.0   0.67   0.83  0.000631   1.63    60.   10.0   0.600  0.985    1303.    0.   1200.    0.
---------------------------------------------------------------------------------------------------------------------------
                                                                          SHARKEY     MACHINERY COMPLEMENT  12
        SIDE-ROLL SYSTEM                                                              EQUIPMENT COMPLEMENT  12
        50 FT. WELL - 30 FT. LIFT, 320 G.P.M. - ELECTRIC - $.03/KWH       0100000000          PRICE VECTOR   2
        CUSTOM COMBINE - $14.00 PLUS $.15 CWT OVER 2,000#-CUSTOM01/13/81

                        BREAKEVEN PRICES
               60.00 CWT. MILO                        ARE PRODUCED:

                                    TO COVER VARIABLE INPUTS              2.112
                           TO COVER VARIABLE INPUTS AND INTEREST          2.686
                             TO COVER VARIABLE INPUTS AND LABOR           2.309
                    TO COVER VARIABLE INPUTS INTEREST AND LABOR           2.877
    TO COVER ALL COSTS EXCEPT LAND OVERHEAD RISK AND MANAGEMENT           3.353
```

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ASSIGNMENT SHEET #3

PARAMETERS AND EQUATIONS FOR MACHINERY COST COMPUTATION OSU BUDGET GENERATOR

Parameters:
Tax rate as % of purchase value .01
Insurance rate as % of average value .006
Factor to get tractor hours from implement hours 1.1
Factor to get labor hours from tractor hours 1.1
Factor to get labor hours for self propelled equipment 1.2
Diesel use per horsepower hour for tractors (gal) .048
Truck consumption of gas per hour of use (gal) 4.0
Pickup consumption of gas per hour of use (gal) 2.5
Combine use of diesel per acre cut (gal) 4.07

Equations needed for cost estimation

$$\text{Salvage Value} = RFV_1 \times \text{Machine List Price} \times RFV_2{}^{**} \times \text{Years Owned}$$

$$\text{Average Value} = \frac{\text{Purchase Price} + \text{Salvage Value}}{2}$$

$$\text{Hours per acre} = \frac{8.25}{\text{Speed} \times \text{width} \times \text{Efficiency}}$$

$$\text{Depreciation} = \frac{\text{Purchase Price} - \text{Salvage Value}}{\text{Years owned}}$$

$$\text{Taxes} = \overset{.01}{\text{Tax Rate}} \times \text{Purchase Price}$$

$$\text{Insurance} = \overset{.006}{\text{Insurance Rate}} \times \text{Average Value}$$

Interest = Interest Rate x Average Value

Tractor Fuel = Fuel use parameter x horsepower x hours per year x Cost per gallon

Combine Fuel = Fuel use parameter x acres per year x cost per gallon

Truck & Pickup Fuel = Fuel use parameter x hours use per year x cost per gallon

Lubricants = .15 x fuel cost

Repair per year = Correct Table Value x Initial List Price/1000

Tractor hours per acre = Machine hours per acre x 1.1

Labor hours per acre = Tractor hours x 1.1

Labor hours for machine per year = Labor hours per acre x acres covered

Labor cost = labor hours/year x wage rate

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MACHINERY ECONOMICS
UNIT VIII

ASSIGNMENT SHEET #4--COMPUTE EQUIPMENT WIDTH TO MATCH TRACTOR HORSEPOWER

NAME________________________________ SCORE____________________

Larger tractors most often are purchased with the intent of increasing field capacity, and in turn, improving the timeliness of field operations. One of the major problems associated with large tractors is that of accurately matching the implement size to the available power. Large tractors, even though they are rugged, can be overloaded and subjected to mechanical failure. At the other extreme, there is often a tendency to pull available smaller tools at too high a speed resulting in a shortened life of the implement. Proper field speed is necessary to give best results.

The procedure for matching equipment to the tractor is:

Step 1: Determine usable drawbar horsepower

Usable drawbar horsepower = (Maximum P.T.O. horsepower) X (Table 1 conversion) factor

Table 1: The following data converts maximum P.T.O. horsepower to usable drawbar horsepower

Soil Condition	Usable hp as a percentage of maximum PTO hp
Firm, untilled soil	62.5%
Previously tilled soil	55.6%
Soft or sandy soil	47.6%

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ASSIGNMENT SHEET #4

Step 2: Select the desired speed in miles per hour (m.p.h.) and the soil resistance in pounds per foot (draft) for the implement from Table 2

Table 2. Typical Speeds and Draft of Farm Equipment per Foot of Width*

		Type of Soil			
Implement	Speed	Sandy		Clay	
	mph	6 in. depth	10 in. depth	6 in. depth	10 in. depth
		Draft (pounds per foot of width)			
Moldboard plow	3.5-6	360	700	600	1,100
		Average Depth			
		Sandy Soil		Clay Soil	
		Draft (pounds per foot of width)			
Tandem disk	3-6	150		250	
Offset, or heavy disk	3-6	250		400	
Chisel plow	4-6.5	300		500	
Subsoiler - bedder	3-5	30 hp per row		40 hp per row	
Rotary hoe	5-10	40		70	
Field cultivator	3-8	200		350	
Peanut digger, inverter	3-4	20 hp per row		30 hp per row	
Row crop cultivator:					
Shallow	2.5-5	40		70	
Deep	1-5-3	20-40 lbs. per ft. per in. depth			
Anhydrous ammonia appl.	3-5	420 lbs. per knife			
Hay conditioner	5-7	2.0 PTO hp per ft.			
Mower-conditioner	4-6	2.0-2.5 PTO hp per ft.			
Hay baler	3-10 T. per hr.	1.5-2.5 hp hr. per ton			
Combine, small grain	2-4	1 PTO hp per in. cylinder width			
Combine, peanut	2-4	1 PTO hp per in. cylinder width			

*Unless otherwise indicated

Adapted with permission of the American Society of Agricultural Engineers, Agricultural Machinery Management Data, ASAE D230.3, rev. December 1977. Complete data is available from ASAE, St. Joseph, Michigan.

(NOTE: Data in this table are based on research data and are intended to serve primarily as a guideline in selecting equipment size. As data are not available for individual on-the-farm situations, this data can be used to approximate those values for the individual farm.)

ASSIGNMENT SHEET #4

Step 3: Calculate proper width of equipment

$$\text{Width (feet)} = \frac{375 \times \text{Usable horsepower}}{\text{Speed (m.p.h.)} \times \text{Draft (lbs. per foot)}}$$

(NOTE: These figures give the limits of horsepower to use in sizing equipment for varying soil conditions. They are intended to serve as a guide in matching equipment with the tractor.)

PROBLEM:

A tractor you are considering purchasing is rated 210 maximum PTO horsepower. Using the following worksheet, compute the size offset disk which can be pulled at 5 m.p.h. on sandy soil.

ASSIGNMENT SHEET #4

MATCHING EQUIPMENT WIDTH TO TRACTOR HORSEPOWER WORKSHEET

1. Determine Usable Drawbar Horsepower

Soil Condition	Usable hp as a percentage of maximum PTO horsepower*
Firm, untilled soil	62.5%
Previously untilled soil	55.6%
Soft or sandy soil	47.6%

Usable drawbar horsepower =

= ________________ max. PTO hp X $\dfrac{\_\_\_\_\_\_\_\_\_}{100}$ conversion factor = ______________

2. a. Speed desired (mph) –

   b. Draft (lbs. per ft. – Table 2) – – – – – – – – – – – – – – – – – – –

3. Width (feet) = $\dfrac{\text{375 X Usable drawbar hp}}{\text{Speed (mph) X Draft (lbs. per ft.)}}$

$$= \frac{375 \text{ X } (\qquad\qquad) \text{ Usable hp}}{(\qquad\quad) \text{ mph X } (\qquad\quad) \text{ Draft}}$$

= ______________________________

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ASSIGNMENT SHEET #4

MATCHING EQUIPMENT WIDTH TO TRACTOR HORSEPOWER WORKSHEET

1. Determine Usable Drawbar Horsepower

Soil Condition	**Usable hp as a percentage of maximum PTO horsepower***
Firm, untilled soil	62.5%
Previously untilled soil	55.6%
Soft or sandy soil	47.6%

Usable drawbar horsepower =

= __________ max. PTO hp X $\frac{\_\_\_\_\_}{100}$ conversion factor = __________

2. a. Speed desired (mph) -

   b. Draft (lbs. per ft. – Table 2) - - - - - - - - - - - - - - - - - - -

3. Width (feet) = $\frac{375 \text{ X Usable drawbar hp}}{\text{Speed (mph) X Draft (lbs. per ft.)}}$

$= \frac{375 \text{ X } (\qquad) \text{ Usable hp}}{(\qquad) \text{ mph X } (\qquad) \text{ Draft}}$

= ____________________

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MACHINERY ECONOMICS
UNIT VIII

ASSIGNMENT SHEET #5--COMPUTE FUTURE USE COSTS TO DETERMINE WHEN TO TRADE FOR NEW MACHINE

NAME______________________________ SCORE__________________

Deciding when to replace farm machinery is not always an easy decision. Four reasons for deciding if a machine needs to be traded are:

1. Old machine is no longer reliable
2. Obsolescence
3. Present machine is too small
4. Machine is no longer economical to operate. Other reasons might include tax implications and the pride and prestige of owning a new machine.

From an economic standpoint, the time to trade machinery is when the annual costs of the old equipment are more than the estimated annual costs of the new equipment. While it is difficult to foresee when major repairs will occur, the accumulated repair costs associated with use of equipment can be estimated and this can serve as a guide for evaluating a trade.

PROBLEM:

A cooperator has a five-year-old, self-propelled combine with 1,500 hours of use and a current value of $10,000.00. It needs repairs costing $1500.00. With repairs it is estimated the machine will last another two years, after which it will have a salvage value of $5000.00. When new the machine sold for $18,500.00. An estimated consideration of $1500.00 was used for reduced efficiency, time lost because of breakdowns, and extra labor required for the old combine.

A new combine lists for $40,000.00 and can be purchased for $30,000.00 plus the old combine as trade-in. At the end of its useful life the new machine is expected to have a salvage value of $12,000.00. The interest rate is 14.5% and the loan life 3 years.

The present combine is used approximately 300 hours annually. It is estimated the new combine could do the same amount of work in 250 hours. Using the following form and tables compute the cost per year for each machine. From an economic standpoint, should this cooperator repair the old combine or trade for the new combine?

(NOTE: The major costs involved in this type decision are (1) depreciation, (2) interest on investment, and (3) repairs and maintainance. Values of used machinery are, at best, an estimate. Consultation with machinery dealers can provide up-to-date information on prices of used equipment. Tables 1 and 2 can help estimate maintainance costs of machines at various stages in the useful life of a machine.)

ASSIGNMENT SHEET #5

Table 1. **Accumulated Repair Costs as a Percent of the Manufacturer's List Price for Farm Machinery – Tractors, Tillage, and Seeding Equipment** [1/]

Farm Tractors		Hours of Use	Plow	Disk, chisel plow, field cultivator	Planter, Drill
Hours of Use	Repair Costs				
	Percent		Percent		
2,500	9.8	500	13.2	5.3	24.7
5,000	29.7	1,000	32.5	18.7	75.0
7,500	56.8	1,500	55.0	38.7	–
10,000	90.0	2,000	80.0	65.0	–

[1/] These are estimates of actual costs. The actual repair costs may range from 50 percent to 200 percent of the estimated costs.

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Example: To estimate future repairs for an old tractor with 5000 hours, subtract 29.7% from 90.0% (10,000 hours). The difference of 60.3% would be multiplied times the manufacturer's list price to determine the future repairs cost of the old machine.

Table 2. **Accumulated Repair Costs as a Percent of the Manufacturer's List Price for Farm Machinery – Harvest Machinery** [1/]

Hours of Use	Combine, Self-Propelled	Corn Head	Cotton Picker, Self-Propelled	Baler, Forage Harvester
	Percent			
500	2.7	14.4	8.2	13.2
1,000	9.5	38.0	24.7	32.5
1,500	19.6	67.0	47.3	55.0
2,000	33.0	100.0	75.0	80.0

[1/] These are estimates of actual cost. The actual repair costs may range from 50 percent to 200 percent of the estimated costs.

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ASSIGNMENT SHEET #5

WORKSHEET FOR COMPUTATION OF FUTURE USE COSTS TO DETERMINE TRADE FOR NEW MACHINE

Machine ____________________
Manufacturers List Price: Old Machine $____________________ New Machine $__________

	Old Machine	New Machine
(1) Cash difference paid for new machine	XXXXX	$______
(2) Current value of old machine[1]	$______	XXXXX
(3) Current value of new machine (1 + 2)	XXXXX	$______
(4) Salvage value at end of useful life[1]	$______	$______
(5) Loss in capital value (current value minus salvage value, 3-4)	$______	$______
(6) Cash expenditures:		
a. Overhaul	$______	XXXXX
b. Future repairs[2]	$______	$______
c. Finance charge on cash difference[3]	XXXXX	$______
d. Less adjusted investment credit[4]	XXXXX	$______
(7) Other considerations[5]__________	$______	$______
(8) Total costs for period (5+6+7)	$______	$______
(9) Years in period	______	______
(10) Cost per year (8 ÷ 9)	$______	______

---

[1] Value can be obtained from machinery dealer or observations of machinery sales.

[2] Estimates taken from Tables 1 and 2. (Table factor times machine list price of new machine)

[3] One-half cash difference times interest rate times length of loan.

[4] Investment credit received on new machine less investment credit paid back on old machine.

[5] Includes added labor costs, reduced efficiency, lost time from breakdown, increased taxes, prestige, etc.

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ASSIGNMENT SHEET #5

WORKSHEET FOR COMPUTATION OF FUTURE USE COSTS TO DETERMINE TRADE FOR NEW MACHINE

Machine ____________________

Manufacturers List Price: Old Machine $____________________ New Machine $__________

	Old Machine	New Machine
(1) Cash difference paid for new machine	XXXXX	$__________
(2) Current value of old machine[1]	$__________	XXXXX
(3) Current value of new machine (1 + 2)	XXXXX	$__________
(4) Salvage value at end of useful life[1]	$__________	$__________
(5) Loss in capital value (current value minus salvage value, 3-4)	$__________	$__________
(6) Cash expenditures:		
a. Overhaul	$__________	XXXXX
b. Future repairs[2]	$__________	$__________
c. Finance charge on cash difference[3]	XXXXX	$__________
d. Less adjusted investment credit[4]	XXXXX	$__________
(7) Other considerations[5]__________	$__________	$__________
(8) Total costs for period (5+6+7)	$__________	$__________
(9) Years in period	__________	__________
(10) Cost per year (8 ÷ 9)	$__________	__________

1/Value can be obtained from machinery dealer or observations of machinery sales.

2/Estimates taken from Tables 1 and 2. (Table factor times machine list price of new machine)

3/One-half cash difference times interest rate times length of loan.

4/Investment credit received on new machine less investment credit paid back on old machine.

5/Includes added labor costs, reduced efficiency, lost time from breakdown, increased taxes, prestige, etc.

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MACHINERY ECONOMICS
UNIT VIII

ASSIGNMENT SHEET #6--COMPUTE CUSTOM RATES

NAME______________________________ SCORE__________________

The charge for doing custom work, the custom rate, varies considerably throughout the state and is undoubtedly affected by competition. Part of the misunderstanding of custom rates is caused by applying the term to situations which are quite different, such as:

1. A farmer who does field work for his neighbor, but only expects enough pay to cover expenses.
2. Neighboring farmers who trade work.
3. An operator who makes at least part of his living doing field work for others and must make a profit from it.

The custom rate must include:

1. Fixed costs--Depreciation, taxes, interest, insurance and shelter
2. Variable costs--Repairs and maintainance, fuel and lube, and labor
3. Risk and profit cost--Percent of fixed costs depending upon risk to the machine due to type of crop, field condition, etc.

   (NOTE: Risk and profit cost usually range from 20 to 50 percent of fixed costs. If a profit is not desired the cost is omitted.)

The annual use of the machine directly affects the cost per hour or per acre. The estimated annual use should be total use, that is, the time required for the operator's own acreage plus time required for custom work.

PROBLEM:

A cooperator purchased a self-propelled, 130 h.p. diesel powered combine with a list price of $50,000.00 for $42,000.00 plus trade-in of old combine. The combine will have a useful life of 5 years and a salvage value of $10,000.00. Additional fixed costs include a 15 percent interest rate and insurance, tax and machinery shelter rates of one percent each. Plans are to use the machine for 400 hours to harvest 500 acres of wheat for himself and 1500 acres for others (custom work). The cooperator expects to average three miles per hour with a 20 foot header and 70 percent efficiency. Diesel costs $1.50 per gallon, labor will be hired at $4.50 per hour and the cooperator feels a profit and risk factor of 35 percent is sufficient.

Using the following custom rate worksheet compute the charge per acre for custom work.

ASSIGNMENT SHEET #6

TABLE 1. Farm Equipment Maintenance and Repair Costs per $1,000 of Initial List Price

Machine	One-Half Expected Service Life		Total Expected Service Life	
	Hours	Cost/Hr. per $1,000	Hours	Cost/Hr. per $1,000
Tractor	5,000	$.06	10,000	$.09
Plow	1,000	.33	2,000	.40
Disks, chisel plow, field cultivator	1,000	.19	2,000	.33
Fertilizer equipment	500	.70	1,000	.93
Planter, drill	500	.49	1,000	.75
Sprayer, mounted	500	.59	1,000	.78
Sprayer, self-propelled	1,000	.30	2,000	.40
Baler[1], forage harvester, ensilage blower	1,000	.33	2,000	.40
Rake, conditioner	1,000	.28	2,000	.37
Mower	500	1.46	1,000	1.80
Combine, self-propelled	1,000	.10	2,000	.17
Corn head	1,000	.38	2,000	.50
Cotton picker, self-propelled	1,000	.25	2,000	.38
Cutter, rotary	1,000	.23	2,000	.30
Peanut combine[2]	1,000	.33	2,000	.40
Peanut digger-shaker[2]	1,000	.33	2,000	.40
Wagon and box	2,000	.14	4,000	.18

1/ Costs for wire or twine not included

2/ Estimates based on machinery records

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TABLE 2. ESTIMATED FUEL USE; GALLONS PER HOUR PER HORSEPOWER

FUEL TYPE	Gasoline	Diesel	LP Gas
FUEL ONLY	0.068	0.048	0.080
FUEL AND LUBRICANTS	0.078	0.055	0.092

* For tractor, use PTO Horsepower

** These factors are 15% larger than for fuel to account for additional cost of lubricants and filters. Multiply the equivalent consumption by the fuel cost to get total costs.

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ASSIGNMENT SHEET #6

TABLE 3. Operating Speeds and Field Efficiency Range of Selected Equipment

Item	Speed (mph)	Efficiency (percent)
Moldboard plow	3.5-6	70-90
Tandem disk	3-6	70-90
Offset, or heavy disk	3-6	70-90
Chisel plow	4-6.5	70-90
Subsoiler-bedder	3-5	70-90
Rotary hoe	5-10	70-90
Planter	3-6	50-85
Field cultivator	3-8	70-90
Row crop cultivator:		
Shallow	2-5-5	70-90
Deep	1.5-3	70-90
Anhydrous ammonia appl.	3-5	60-75
Sprayer	3-5	50-80
Hay conditioner	5-7	75-85
Mower-conditioner	4-6	60-85
Hay baler	3-10 tons per hr.	60-85
Combine, small grain	2-4	65-80
Combine, peanut	2-4	65-80
Cotton picker, SP	----	60-75

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ASSIGNMENT SHEET #6

CUSTOM RATE WORKSHEET

MACHINE________________

A. Compute Annual Fixed Costs:

$$\text{Depreciation} = \frac{\text{(Purchase Price) - (Salvage Value)}}{\text{(Number of Years Used)}}$$

(1) $\text{DEPRECIATION} = \frac{(\$\qquad) - (\$\qquad)}{(\qquad)}$ = $______

$$\text{Annual Interest} = \frac{\text{(Purchase Price) + (Salvage Value)}}{(2)} \times \text{Interest Rate}$$

(2) $\text{INTEREST} = \frac{(\$\qquad) + (\$\qquad)}{(2)}$ X ______ = $______

$$\text{Insurance} = \frac{\text{(Purchase Price) + (Salvage Value)}}{(2)} \times \text{Insurance Rate}$$

(3) $\text{INSURANCE} = \frac{(\$\qquad) + (\$\qquad)}{(2)}$ X ______ = $______

Taxes = Purchase Price X Tax Rate

(4) TAXES = ($) X ______ = $______

a. Annual Fixed Costs = (1) + (2) + (3) + (4) = $______

$$\text{Annual Fixed Costs per Hour} = \frac{\text{Annual Fixed Costs}}{\text{Hours Used Annually}}$$

b. $\text{ANNUAL FIXED COSTS PER HOUR} = \frac{(\$\qquad)}{(\qquad)}$ = $______/Hr.

B. Compute Annual Variable Costs:

$$\text{Repairs} = \frac{\text{(Initial List Price)}}{(\$1{,}000)} \times \text{Table 1 Factor}$$

(1) $\text{REPAIRS} = \frac{(\$\qquad)}{(\$1{,}000)}$ X $______ = $______/Hr.

Fuel = Engine or P.T.O. Horsepower X Table 2 Factor X Fuel Costs

(2) FUEL = ______ H.P. X 0.0 ______ X $______/gallon = $______/Hr.

Lubrication = Fuel Costs X 15 percent

(3) LUBRICATION = $______ X 0.15 = $______/Hr.

(4) LABOR = $______/Hr.

Annual Variable Costs per Hour = (1) + (2) + (3) + (4)

a. ANNUAL VARIABLE COSTS PER HOUR = $______/Hr.

ASSIGNMENT SHEET #6

C. Compute Risk and Profit Costs per Hour:

$$\text{Risk and Profit Costs per Hour} = \text{Annual Fixed Costs per Hour} \times \text{Percent Profit Desired}$$

(1) RISK AND PROFIT COSTS PER HOUR = $_____ X $\frac{\_\_\_\_\_}{100}$ = $_____/Hr.

D. Compute Total Costs:

Total Cost per Hour = Annual fixed costs per hour + Annual variable costs per hour + Risk and Profit Costs per hour

(1) TOTAL COSTS PER HOUR = $_____ + $_____ + $_____ = $_____/Hr.

E. Compute Acres per Hour:

$$\text{Effective Field Capacity} = \frac{\text{Speed (mph)} \times \text{Width (feet)}}{8.25} \times \frac{\text{Field Efficiency (Table 3)}}{100}$$

(1) $\text{ACRES PER HOUR} = \frac{\_\_\_\text{(mph)} \times \_\_\_\text{(feet)}}{8.25} \times \frac{\_\_\_\_\_}{100}$ = $_____ Acres/Hr.

F. Compute Costs per Acre:

$$\text{Costs per Acre} = \frac{\text{Costs per Hour}}{\text{Acres per Hour}}$$

(1) COSTS PER ACRE = $\frac{(\$\_\_\_\_\_)}{(\$\_\_\_\_\_)}$ = $_____/Acre

(NOTE: If more than one item of equipment is used in an operation, such as a tractor and associated equipment, use separate worksheets to calculate the cost for each item.)

ASSIGNMENT SHEET #6

CUSTOM RATE WORKSHEET

MACHINE ____________________

A. Compute Annual Fixed Costs:

$$\text{Depreciation} = \frac{\text{(Purchase Price) - (Salvage Value)}}{\text{(Number of Years Used)}}$$

(1) DEPRECIATION = $\dfrac{(\$\qquad) - (\$\qquad)}{(\qquad)}$ = $________

$$\text{Annual Interest} = \frac{\text{(Purchase Price) + (Salvage Value)}}{(\ 2\ )} \times \text{Interest Rate}$$

(2) INTEREST = $\dfrac{(\$\qquad) + (\$\qquad)}{(\ 2\ )}$ X ________ = $________

$$\text{Insurance} = \frac{\text{(Purchase Price) + (Salvage Value)}}{(\ 2\ )} \times \text{Insurance Rate}$$

(3) INSURANCE = $\dfrac{(\$\qquad) + (\$\qquad)}{(\ 2\ )}$ X ________ = $________

Taxes = Purchase Price X Tax Rate

(4) TAXES = ($) X ________ = $________

a. Annual Fixed Costs = (1) + (2) + (3) + (4) = $________

$$\text{Annual Fixed Costs per Hour} = \frac{\text{Annual Fixed Costs}}{\text{Hours Used Annually}}$$

b. ANNUAL FIXED COSTS PER HOUR = $\dfrac{(\$\qquad)}{(\qquad)}$ = $________/Hr.

B. Compute Annual Variable Costs:

$$\text{Repairs} = \frac{\text{(Initial List Price)}}{(\$1{,}000)} \times \text{Table 1 Factor}$$

(1) REPAIRS = $\dfrac{(\$\qquad)}{(\$1{,}000)}$ X $________ = $________/Hr.

Fuel = Engine or P.T.O. Horsepower X Table 2 Factor X Fuel Costs

(2) FUEL = ________ H.P. X 0.0________ X $________/gallon = $________/Hr.

Lubrication = Fuel Costs X 15 percent

(3) LUBRICATION = $________ X 0.15 = $________/Hr.

(4) LABOR = $________/Hr.

Annual Variable Costs per Hour = (1) + (2) + (3) + (4)

a. ANNUAL VARIABLE COSTS PER HOUR = $________/Hr.

ASSIGNMENT SHEET #6

C. Compute Risk and Profit Costs per Hour:

$$\text{Risk and Profit Costs per Hour} = \text{Annual Fixed Costs per Hour} \times \text{Percent Profit Desired}$$

(1) RISK AND PROFIT COSTS PER HOUR $= \$\_\_\_\_\_ \times \frac{\_\_\_\_\_}{100} = \$\_\_\_\_\_/\text{Hr.}$

D. Compute Total Costs:

Total Cost per Hour = Annual fixed costs per hour + Annual variable costs per hour + Risk and Profit Costs per hour

(1) TOTAL COSTS PER HOUR $= \$\_\_\_\_\_ + \$\_\_\_\_\_ + \$\_\_\_\_\_ = \$\_\_\_\_\_/\text{Hr.}$

E. Compute Acres per Hour:

$$\text{Effective Field Capacity} = \frac{\text{Speed (mph)} \times \text{Width (feet)}}{8.25} \times \frac{\text{Field Efficiency (Table 3)}}{100}$$

(1) $\text{ACRES PER HOUR} = \frac{\_\_\_\_\_\text{(mph)} \times \_\_\_\_\_\text{(feet)}}{8.25} \times \frac{\_\_\_\_\_}{100} = \$\_\_\_\_\_\text{Acres/Hr.}$

F. Compute Costs per Acre:

$$\text{Costs per Acre} = \frac{\text{Costs per Hour}}{\text{Acres per Hour}}$$

(1) COSTS PER ACRE $= \frac{(\$\_\_\_\_\_)}{(\$\_\_\_\_\_)} = \$\_\_\_\_\_/\text{Acre}$

(NOTE: If more than one item of equipment is used in an operation, such as a tractor and associated equipment, use separate worksheets to calculate the cost for each item.)

MACHINERY ECONOMICS
UNIT VIII

ANSWERS TO ASSIGNMENT SHEETS

Assignment Sheets #1 and #2--See the following pages

Assignment Sheet #1

MACHINERY COST WORKSHEET

MACHINE 16 ft. Self-Propelled Combine

A. Compute Annual Fixed Costs:

$$\text{Depreciation} = \frac{\text{(Purchase Price) - (Salvage Value)}}{\text{(Number of Years Used)}}$$

$$\text{(1) DEPRECIATION} = \frac{(\$37{,}500) - (\$4{,}000)}{(10)} \qquad = \$\,3{,}350.^{00}$$

$$\text{Annual Interest} = \frac{\text{(Purchase Price) + (Salvage Value)}}{(2)} \times \text{Interest Rate}$$

$$\text{(2) INTEREST} = \frac{(\$37{,}500) + (\$4{,}000)}{(2)} \times .18 \qquad = \$\,3{,}735.^{00}$$

$$\text{Insurance} = \frac{\text{(Purchase Price) + (Salvage Value)}}{(2)} \times \text{Insurance Rate}$$

$$\text{(3) INSURANCE} = \frac{(\$37{,}500) + (\$4{,}000)}{(2)} \times .006 \qquad = \$\,124.^{50}$$

Taxes = Purchase Price X Tax Rate

$$\text{(4) TAXES} = (\$37{,}500) \times .01 \qquad = \$\,375.^{00}$$

$$\text{a. Annual Fixed Costs} = (1) + (2) + (3) + (4) \qquad = \$\,7{,}584.^{50}$$

$$\text{Annual Fixed Costs per Hour} = \frac{\text{Annual Fixed Costs}}{\text{Hours Used Annually}}$$

$$\text{b. ANNUAL FIXED COSTS PER HOUR} = \frac{(\$7{,}584.^{50})}{(200)} \qquad = \$\,37.92\text{/Hr.}$$

B. Compute Annual Variable Costs:

$$\text{Repairs} = \frac{\text{(Initial List Price)}}{(\$1{,}000)} \times \text{Table 1 Factor}$$

$$\text{(1) REPAIRS} = \frac{(\$42500)}{(\$1{,}000)} \times \$\,.17 \qquad = \$\,7.22\text{/Hr.}$$

Fuel = Engine or P.T.O. Horsepower X Table 2 Factor X Fuel Costs

$$\text{(2) FUEL} = 100\text{ H.P.} \times 0.0\,48 \times \$\,1.50\text{/gallon} \qquad = \$\,7.20\text{/Hr.}$$

Lubrication = Fuel Costs X 15 percent

$$\text{(3) LUBRICATION} = \$\,7.20 \times 0.15 \qquad = \$\,1.08\text{/Hr.}$$

Assignment Sheet #1

(4) LABOR = $ 5.00 /Hr.

Annual Variable Costs per Hour = (1) + (2) + (3) + (4)

a. ANNUAL VARIABLE COSTS PER HOUR = $ 20.50 /Hr.

C. Compute Total Costs:

Total Cost per Hour = Annual fixed costs per hour = Annual variable costs /Hr.

(1) TOTAL COSTS PER HOUR = $ 37.92 + $ 20.50 = $ 58.42 /Hr.

D. Compute Acres per Hour:

$$\text{Effective Field Capacity} = \frac{\text{Speed (mph)} \times \text{Width (feet)}}{8.25} \times \frac{\text{Field Efficiency (Table 3)}}{100}$$

(1) $\text{ACRES PER HOUR} = \frac{3 \text{ (mph)} \times 16 \text{ (feet)}}{8.25} \times \frac{75}{100}$ = $ 4.35 Acres/Hr.

E. Compute Costs per Acre:

$$\text{Costs per Acre} = \frac{\text{Costs per Hour}}{\text{Acres per Hour}}$$

(1) COSTS PER ACRE = $\frac{(\$ \ 58.42)}{(\$ \ 4.35)}$ = $ 13.42 /Acre

(NOTE: If more than one item of equipment is used in an operation, such as a tractor and associated equipment, use separate worksheets to calculate the cost for each item.)

Assignment Sheet #2

SITUATION: Continue with custom cutting or purchase your own combine.

ADDITIONAL COSTS

Fixed costs -- $8.96
Variable Costs -- 4.40
Hauling -- 2.76
Labor -- 7.20
$23.32

ADDITIONAL RETURNS

3 Additional bushels -- $10.50

REDUCED RETURNS

-0-

REDUCED COSTS

Custom cutting -- $15.00
Custom hauling -- 3.00
$18.00

A. TOTAL ANNUAL ADDITIONAL COSTS AND REDUCED RETURNS

$ 23.32

B. TOTAL ANNUAL ADDITIONAL RETURNS AND REDUCED COSTS

$ 28.50

NET CHANGE IN INCOME (B minus A) $ +5.18

From an economic standpoint, cooperator would buy the combine, cut the wheat and do the hauling.

Assignment Sheet #3

a. Time requirements for offset disk and tractor

1) Offset disk = .13

2) Tractor = .13 x 1.1 = .143

3) Labor = .143 x 1.1 = .157

b. Variable costs per acre for offset disk and tractor

1) Offset disk = $1.45 x .13 = $.188

2) Tractor = $9.99 x .143 = $1.428

Total variable costs = $1.616 or $1.62 per acre

c. Fixed costs per acre for offset disk and tractor

1) Offset disk = $7.10 x .13 = $.923

2) Tractor = $4.50 x .143 = $.643

3) Interest (offset disk) = $6.78 x .13 = $.881

4) Interest (tractor) = $5.53 x .143 = $.790

Total fixed costs = $3.237 or $3.24 per acre

d. Total labor costs per acre

.157 x $4.00 = $.628 or $.63 per acre

e. Total costs per acre

1) Total fixed costs = $1.62

2) Total variable costs = $3.24

3) Total labor costs = $ .63

Total costs per acre = $5.49 per acre

Assignment Sheet #4

MATCHING EQUIPMENT WIDTH TO TRACTOR HORSEPOWER WORKSHEET

1. Determine Usable Drawbar Horsepower

Soil Condition	Usable hp as a percentage of maximum PTO horsepower*
Firm, untilled soil	62.5%
Previously untilled soil	55.6%
Soft or sandy soil	47.6%

Usable drawbar horsepower =

= 210 max. PTO hp X $\frac{.476}{100}$ conversion factor = 99.96

2. a. Speed desired (mph) ------------------------ 5

b. Draft (lbs. per ft. – Table 2) -------------------- 250

3. $$\text{Width (feet)} = \frac{375 \times \text{Usable drawbar hp}}{\text{Speed (mph)} \times \text{Draft (lbs. per ft.)}}$$

$$= \frac{375 \times (99.96)\ \text{Usable hp}}{(5)\ \text{mph} \times (250)\ \text{Draft}}$$

= 30 foot (29.99)

Assignment Sheet #5

WORKSHEET FOR COMPUTATION OF FUTURE USE COSTS TO DETERMINE TRADE FOR NEW MACHINE

Machine Combine

Manufacturers List Price: Old Machine $\$18,500^{00}$ New Machine $\$40,000^{00}$

	Old Machine	New Machine
(1) Cash difference paid for new machine	XXXXX	$\$30,000^{00}$
(2) Current value of old machine 1/	$\$10,000^{00}$	XXXXX
(3) Current value of new machine (1 + 2)	XXXXX	$\$40,000^{00}$
(4) Salvage value at end of useful life 1/	$\$5,000^{00}$	$\$12,000^{00}$
(5) Loss in capital value (current value minus salvage value, 3-4)	$\$5000^{00}$	$\$28,000^{00}$
(6) Cash expenditures:		
a. Overhaul	$\$1500^{00}$	XXXXX
b. Future repairs 2/ [(.33-.196)18500]	$\$2479^{00}$	.33(40,000) $\$13,200^{00}$
c. Finance charge on cash difference 3/	XXXXX	$\$6,525^{00}$
d. Less adjusted investment credit 4/	XXXXX	$ <3000.00>
(7) Other considerations 5/ ____	$\$1500^{00}$	$\$0^{00}$
(8) Total costs for period (5+6+7)	$\$10,479^{00}$	$\$44,725^{00}$
(9) Years in period	2	8
(10) Cost per year (8 ÷ 9)	$\$5239^{50}$	5590^{62}

The estimated annual cost of the old combine is slightly less ($351.12) than that of the new combine. Since the costs do not vary by a large amount, the higher reliability associated with the new machine should be given consideration when deciding whether or not to trade.

Assignment Sheet #6

CUSTOM RATE WORKSHEET

MACHINE SP Combine

A. Compute Annual Fixed Costs:

Depreciation = $\frac{\text{(Purchase Price) - (Salvage Value)}}{\text{(Number of Years Used)}}$

(1) DEPRECIATION = $\frac{(\$42,000) - (\$10,000)}{(5)}$ = $6,400.00

Annual Interest = $\frac{\text{(Purchase Price) + (Salvage Value)}}{(2)}$ X Interest Rate

(2) INTEREST = $\frac{(\$42,000) + (\$10,000)}{(2)}$ X .15 = $3900.00

Insurance = $\frac{\text{(Purchase Price) + (Salvage Value)}}{(2)}$ X Insurance Rate

(3) INSURANCE = $\frac{(\$42,000) + (\$10,000)}{(2)}$ X .01 = $260.00

Taxes = Purchase Price X Tax Rate

(4) TAXES = ($ 42,000) X .01 = $420.00

a. Annual Fixed Costs = (1) + (2) + (3) + (4) = $10,980.00

Annual Fixed Costs per Hour = $\frac{\text{Annual Fixed Costs}}{\text{Hours Used Annually}}$

b. ANNUAL FIXED COSTS PER HOUR = $\frac{(\$10,980)}{(400)}$ = $ 27.45/Hr.

B. Compute Annual Variable Costs:

Repairs = $\frac{\text{(Initial List Price)}}{(\$1,000)}$ X Table 1 Factor

(1) REPAIRS = $\frac{(\$50,000)}{(\$1,000)}$ X $ .17 = $ 8.50/Hr.

Fuel = Engine or P.T.O. Horsepower X Table 2 Factor X Fuel Costs

(2) FUEL = 130 H.P. X 0.0 48 X $ 1.50/gallon = $ 9.36/Hr.

Lubrication = Fuel Costs X 15 percent

(3) LUBRICATION = $ 9.36 X 0.15 = $ 1.40/Hr.

(4) LABOR = $ 4.50/Hr.

Annual Variable Costs per Hour = (1) + (2) + (3) + (4)

a. ANNUAL VARIABLE COSTS PER HOUR = $ 23.76/Hr.

Assignment Sheet #6

C. Compute Risk and Profit Costs per Hour:

$$\text{Risk and Profit Costs per Hour} = \text{Annual Fixed Costs per Hour} \times \text{Percent Profit Desired}$$

(1) $$\text{RISK AND PROFIT COSTS PER HOUR} = \$\underline{27.45} \times \frac{35}{100} = \$\underline{9.60}\,/\text{Hr.}$$

D. Compute Total Costs:

Total Cost per Hour = Annual fixed costs per hour + Annual variable costs per hour + Risk and Profit Costs per hour

(1) $$\text{TOTAL COSTS PER HOUR} = \$\underline{27.45} + \$\underline{23.76} + \$\underline{9.60} = \$\underline{60.81}\,/\text{Hr.}$$

E. Compute Acres per Hour:

$$\text{Effective Field Capacity} = \frac{\text{Speed (mph)} \times \text{Width (feet)}}{8.25} \times \frac{\text{Field Efficiency (Table 3)}}{100}$$

(1) $$\text{ACRES PER HOUR} = \frac{\underline{3}\ \text{(mph)} \times \underline{20}\ \text{(feet)}}{8.25} \times \frac{70}{100} = \$\underline{5.08}\ \text{Acres/Hr.}$$

F. Compute Costs per Acre:

$$\text{Costs per Acre} = \frac{\text{Costs per Hour}}{\text{Acres per Hour}}$$

(1) $$\text{COSTS PER ACRE} = \frac{(\$\ 60.81\ )}{(\$\ 5.08\ )} = \$\underline{11.97}\,/\text{Acre}$$

(NOTE: If more than one item of equipment is used in an operation, such as a tractor and associated equipment, use separate worksheets to calculate the cost for each item.)

MACHINERY ECONOMICS
UNIT VIII

TEST

NAME________________________ SCORE______________

1. Match terms associated with machinery economics to the correct definitions. Write the correct numbers in the blanks provided.

_____a. Power transmitted to the implement by the tractor

_____b. Rate, in acres per hour, that a machine is working, when no time is lost due to turns, unused width, stopping, plugging, and breakdowns

_____c. Percentage of theoretical field work accomplished after deducting losses which result from failure to use full width of the machine, turning, and idle travel at the ends of rows, clogging, adjusting seed or fertilizer, unloading harvested crops, machine adjustments, minor repairs, lubrication, and other minor interruptions

_____d. Ability to perform and complete an operation at or during the optimum time

_____e. Outlays that vary as a result of increasing or decreasing the hours of use a machine is subjected to

_____f. Outlays which do not vary with machine use

_____g. Undepreciated balance of all items of machinery and equipment

_____h. Making and implementing decisions in all aspects of acquiring and using machines

1. Variable costs
2. Theoretical capacity
3. Drawbar horsepower
4. Timeliness
5. Field efficiency
6. Machinery management
7. Fixed costs
8. Machinery investment

2. State purposes of machinery management. Write your answer in the blanks provided below and on the next page.

a. ____

b. ____

c. ____

d. ____

e. ____

f. ____

3. State four factors to consider when selecting machinery and equipment. Write your answer in the blanks provided.

a. ____

____

b. ____

____

c. ____

____

d. ____

____

4. Match kinds of fixed costs involved in owning machinery to the correct definitions. Write the correct numbers in the blanks provided.

_____a. Annual interest charge on the unrecovered cost of machinery

_____b. Decline in value resulting from age, obsolescence, and wear

_____c. Means of shifting risk of uncertain events, at a cost, from you to someone else specializing in taking risks

_____d. Shelter which covers or affords protection to machinery

_____e. Charge, usually of money, imposed by authority upon property for public purposes

1. Taxes
2. Insurance
3. Machinery shelter
4. Depreciation
5. Interest on investment

5. Apply the rule for estimating annual fixed costs of machinery as a percent of purchase costs for a $50,000.00 tractor with annual fixed costs estimated at 21% of the purchase price.

____

(NOTE: Show all your work and record your final answer in the blank above. The formula below may be helpful for your calculations.)

(List price of machinery) x (Total estimated annual fixed costs expressed as a percent of new value) = Annual fixed costs

6. List kinds of variable costs involved in operating machinery. Write your answer in the blanks provided.

a. ____

b. ____

c. ____

d. ____

7. Apply the rule for determining repair costs for a $40,000.00, self-propelled combine used to harvest 1,200 acres annually at 5 acres per hour.

a. Repair costs per hour--____

b. Repair costs per acre--____

(NOTE: Show all your work and record your final answer in the blanks above. The formulas below may be helpful for your calculations. Also, the cost factor for a self-propelled combine is .17 cost per hour per $1,000, according to the appropriate list given in the information sheet.)

$$\frac{\text{Initial list price}}{1{,}000} \times \text{(Accumulated repair costs factor per \$1,000 of initial list price)} = \text{Repair costs per hour}$$

$$\frac{\text{Repair costs per hour}}{\text{Acres per hour}} = \text{Repair costs per acre}$$

8. Apply the rule for determining fuel and lubrication costs for a 150 horsepower, self-propelled combine harvesting 5 acres per hour using diesel fuel priced as $1.25 per gallon.

   a. Fuel costs per hour--____

   b. Lubrication costs per hour--____________________________________

   c. Fuel and lubrication costs per hour--______________________________

   (NOTE: Show all your work and record your final answers in the blanks above. The formulas below may be helpful in your calculations. Also, the factors for diesel are) 0.048 for fuel only and 0.055 for fuel and lubrication, according to the appropriate list given in the information sheet.)

   (PTO horsepower) x (Fuel only factor) x (Fuel costs) = Fuel costs per hour

   (Fuel costs per hour) x (15%) = Lubrication costs per hour

   (PTO horsepower) x (Fuel and lubricants factor) x (Fuel cost) = Fuel and lubrication costs per hour

$$\frac{\text{Fuel and lubrication costs per hour}}{\text{Acres per hour}} = \text{Fuel and lubrication costs per acre}$$

9. Apply the rule for determining the theoretical capacity of a machine for a 20-foot, offset disk traveling 4 m.p.h.

Theoretical capacity ______________________________

(NOTE: Show all your work and record your final answer in the blank above. The formula below may be helpful in your calculations.)

$$\frac{(\text{Speed}) \times (\text{Width})}{8.25} = \text{Theoretical capacity}$$

10. State three general rules that affect field efficiency. Write your answer in the blanks provided.

a. ______________________________

____

b. ______________________________

____

c. ______________________________

____

11. Apply the rule for estimating required effective field capacity for a machine to perform a specific function for a 20-foot, offset disk traveling 4 m.p.h. with an 80% field efficiency.

Effective field capacity (in acres per hour)-______________________________

(NOTE: Show all your work and record your final answer in the blank above. The formula below may be helpful in your calculation.)

$$\frac{(\text{Speed}) \times (\text{Width})}{8.25} \times \frac{\text{Field efficiency}}{100} = \begin{array}{l}\text{Effective field capacity} \\ \text{(in acres per hour)}\end{array}$$

12. Apply the rule for determining machinery labor costs per acre for a 6 x 16" moldboard plow traveling 4 m.p.h. with an 80% field efficiency.

    a. Implement time-- ____________________

    b. Tractor time-- ____________________

    c. Labor time-- ____________________

    d. Acres per hour-- ____________________

    e. Labor costs per acre-- ____________________

    (NOTE: Show all your work and record your final answers in the blanks above. The formulas below may be helpful in your calculations. Also, the labor cost is $4.00 per hour.)

$$\frac{1}{\text{Speed (m.p.h.)} \times \text{Width (feet)} \times \text{Efficiency (decimal)}/8.25} = \begin{matrix}\text{Implement time}\\ \text{(hours per acre)}\end{matrix}$$

Implement hours x 1.1 = Tractor time (hours per acre)

Tractor time x 1.1 = Labor hours (hours per acre)

$$\frac{1}{\text{Labor hours}} = \text{Acres per hour}$$

$$\frac{\text{Labor costs per hour}}{\text{Acres per hour}} = \text{Labor costs per acre}$$

13. State characteristics of timeliness costs. Write your answer in the space below.

    a. ____________________

    ____

    b. ____________________

    ____

14. Select from the list below characteristics of the relationship between cost and machine use. Mark each correct answer with an "X" in the blanks provided.

    _____a. Machine costs are in no way related to the extent of running time

    _____b. Average costs initially rise as use increases because fixed costs are spread over more units of work

    _____c. As machine use is increased, total cost is increased; however, average costs will decrease, reach a minimum, and increase again

    _____d. Average costs initially decline as use increases because fixed costs are spread over more units of work

    _____e. Machine costs are highly correlated to the extent of machine use

15. Select from the list below points to consider when deciding which machines to buy. Mark each correct answer with an "X" in the blanks provided.

    ______a. Will the machine do the job satisfactorily?

    ______b. Does the machine fit into the present system or must other equipment be purchased?

    ______c. Is capacity small enough to keep costs high?

    ______d. Would a used machine do the job adequately at less cost?

    ______e. Is a new machine required?

    ______f. Is capacity sufficient to accomplish major operations without timeliness losses?

    ______g. Are initial costs prohibitive and annual hourly use so low the machine will be obsolete before costs are minimized?

16. State four factors that determine the size of equipment to buy. Write your answer in the blanks provided.

    a. ______________________________

    b. ______________________________

    c. ______________________________

    d. ______________________________

17. Select from the list below items considered in determining the number and size of tractors. Mark each correct answer with an "X" in the blanks provided.

    ______a. The main objective of the selection process is to get the desired work done when it can be done and not necessarily at the lowest cost

    ______b. Machinery implements must be accurately matched to tractor

    ______c. Variations in total working time needed to complete field operations

    ______d. Machinery implements should be as large as the individual's cash flow schedule will allow

    ______e. The main objective of the selection process is to get the desired work done on time with the lowest cost

18. Distinguish between advantages and disadvantages of two-wheel drive tractors. Mark an "X" in the correct blanks for *advantages*.

    ______a. Has a wide variety of sizes and types available

    ______b. Has a good selection of equipment to match with other tractors

    ______c. Has lower cost per horsepower

    ______d. Is well-suited to tow crops and general farming ______e. Has the most economical power in smaller sizes

______f. Has traction and ballasting problems with large units

______g. Is restricted to smaller units, meaning higher labor costs due to more hours

______h. Has a limit on size from a practical standpoint

______i. Has traction problems with high draft tools

19. Distinguish between advantages and disadvantages of four-wheel drive tractors. Mark an "X" in the correct blanks for *advantages*.

______a. Needs high capital outlay

______b. May have high individual repair bills

______c. Has limited selection of size and type

______d. Has concentration of risk for critical operation

______e. Needs special hitches

______f. Is not well-suited for row crops or irrigation farming

______g. Provides means for increased capacity

______h. Saves labor

______i. Gets important jobs done quicker

______j. Has better ballasting for traction

______k. Is well-suited to high draft tools

20. State types of break-even analyses which may be performed before choosing machinery. Write your answer in the space below.

a. ____

b. ____

21. List alternatives to sole ownership and use. Write your answer in the space below.

a. ____

b. ____

c. ____

d. ____

22. Distinguish between advantages and disadvantages of custom service. Write in the correct blanks an "A" for advantages and a "D" for disadvantages.

    ______a. Ownership costs are eliminated

    ______b. Service may not be available when job is ready

    ______c. There may be benefits from newer machinery, a skilled operator, and less time required

    ______d. Annual costs may be higher than ownership cost

    ______e. Annual machinery costs may be varied to suit weather, yield, and market conditions of individual years

    ______f. Labor released by hiring custom work may not be profitably used

    ______g. Custom operators prefer large jobs and refuse or postpone small jobs

    ______h. Capital can be invested in other enterprises

    ______i. Custom operators are sometimes interested in acres rather than efficiency

23. Compute machinery costs.

24. Use partial budgeting in the machinery selection process.

25. Determine cost calculations on Oklahoma State University Enterprise Budgets.

26. Compute equipment width to match tractor horsepower.

27. Compute future use costs to determine when to trade for new machine.

28. Compute custom rates.

    (NOTE: If activities 23 through 28 have not been finished before the test, ask the instructor when they will be done.)

MACHINERY ECONOMICS
UNIT VIII

ANSWERS TO TEST

1. a. 3
   b. 2
   c. 5
   d. 4
   e. 1
   f. 7
   g. 8
   h. 6

2. a. To adjust costs of production and/or profits
   b. To improve field efficiency
   c. To provide information to help devleop long-run farm plans
   d. To complete more work with available time
   e. To reduce labor input
   f. To evaluate capital investment

3. Answer should include any four of the following:
   a. Adaption of machine to needs
   b. Reliability of manufacturer
   c. Parts and service available from dealer
   d. Price and quality of machine
   e. Availability of fuel used on engine-driven machines
   f. Ease of making adjustments and minor repairs
   g. Design and neatness of appearance
   h. Added investment should be offset by reducing the required labor or permitting the labor to be used more productively
   i. Resale or salvage value

4. a. 5
   b. 4
   c. 2
   d. 3
   e. 1

5. $(\$50{,}000) \times \frac{21\%}{100} = \$10{,}500.00$ annual fixed costs

6. a. Repairs and maintenance

   b. Fuel and lubrication

   c. Machinery labor hours

   d. Dependability

7. a. $\frac{\$40{,}000.00}{1{,}000} \times .17 = \$6.80$ repair costs per hour

   b. $\frac{\$6.80}{5} = \$1.36$ repair costs per acre

8. a. $(150 \text{ hp}) \times (0.048) \times (\$1.25) = \$9.00$ fuel costs per hour

   b. $(\$9.00) \times (.15) = \$1.35$ lubrication costs per hour

   c. $\frac{\$10.35}{5} = \$2.07$ fuel and lubrication costs per acre

9. $\frac{4 \text{ m.p.h.} \times 20 \text{ ft.}}{8.25} = 9.7$ acres per hour

10. Answer should include any three of the following:

    a. A normal turn at the end of row should be made with one continuous motion

    b. When space at end of row is too narrow for a complete turn and requires backing for completion, as much as 50 percent more time is needed

    c. If there is not any space at the end of row for a turn and the entire operation must be completed by backing, turning time may be two and one-fourth times that of a normal turn

    d. Operators may increase field efficiencies by 10 percent or more by simply trying to eliminate unnecessary time the implement is down at the end of a furrow or row

    e. Other increases include 11 percent for rough field condiitons, 29 percent for obstructions, and 25 percent for ditches

11. $\frac{4 \text{ m.p.h.} \times 20 \text{ ft.}}{8.25} \times \frac{80}{100} = 7.75$ acres per hour

12. a. $\frac{1}{4 \text{ m.p.h.} \times 8 \times .80/100} = .32$ hours per acre

    b. $.32 \times 1.1 = .352$ hours per acre

    c. $.352 \times 1.1 = .387$ hours per acre

d. $\frac{1}{.387}$ = 2.584 acres per hour

e. $\frac{\$4.00}{2.584}$ = \$1.548 per acre

13. a. Have economic value

    b. Will show up as time losses due to servicing, loading, unloading, unplugging, and turning

14. c, d, e

15. a, b, d, f, g

16. Answer should include any four of the following:

    a. Size and type of farming operation

    b. Soil type and topography

    c. Labor available

    d. Capital available

    e. Skill of the operator

    f. Number of days in the season available to use this machine

17. b, c, e

18. a, b, c, d, e

19. g, h, i, j, k

20. a. Comparing costs of machines

    b. Comparing break-even hours of use for gasoline and diesel tractors

21. a. Custom work

    b. Used machinery

    c. Joint ownership of machinery

    d. Leasing

22. a. A

    b. D

    c. A

    d. D

    e. A

    f. D

    g. D

    h. A

    i. D

23. Evaluated to satisfaction of instructor
24. Evaluated to satisfaction of instructor
25. Evaluated to satisfaction of instructor
26. Evaluated to satisfaction of instructor
27. Evaluated to satisfaction of instructor
28. Evaluated to satisfaction of instructor

INCOME TAX MANAGEMENT
UNIT IX

UNIT OBJECTIVE

After completion of this unit, the cooperator should be able to identify and use methods of tax management. This knowledge will be evidenced by completion of assignment sheets, actual use on the farm, and by completion of the unit test with a mininum of 85 percent accuracy.

SPECIFIC OBJECTIVES

After completion of this unit, the cooperator should be able to:

1. Match terms associated with income tax management to the correct definitions.
2. State purposes of tax management and tax planning.
3. Arrange in order steps in determining when to use income tax strategies.
4. List records and information needed to fill out an income tax estimate worksheet.
5. List special tax situations which can affect an individual's or farm business's tax bracket.
6. Distinguish between tax management strategies to increase or decrease income.
7. Select from a list characteristics of investment tax credit.
8. Select from a list characteristics of depreciation in tax management.
9. Select from a list characteristics of capital gains tax.
10. State factors in a declaration of estimated tax.
11. Distinguish between partnership and corporation tax considerations.
12. Distinguish among types of special tax problems.
13. Complete an income tax estimate worksheet.
14. Use a checklist of allowable deductions.

INCOME TAX MANAGEMENT
UNIT IX

SUGGESTED ACTIVITIES

I. Suggested activities for instructor:

  A. Provide cooperator with objective sheet.

  B. Provide cooperator with information and assignment sheets.

  C. Discuss unit and specific objectives.

  D. Discuss information and assignment sheets.

  E. This unit is not intended to be all-inclusive. Local instructors should personalize this unit to their own area to allow for maximum effectiveness.

  F. Order copies of I.R.S. *Farmers' Tax Guide* for each cooperator. These can be obtained from the Department of the Treasury, Internal Revenue Service, Washington, D.C.

  G. Invite a tax accountant to be a guest speaker for the class.

  H. Give test.

  I. Critique test.

  J. Reteach, if necessary.

II. Instructional materials:

  A. Objective sheet

  B. Information sheet

  C. Assignment sheets

    1. Assignment Sheet #1--Complete an Income Tax Estimate Worksheet

    2. Assignment Sheet #2--Use a Checklist of Allowable Deductions

  D. Answers to assignment sheets

  E. Test

  F. Answers to test

III. Unit references:

A. *Federal Tax Guide.* Chicago, Illinois: Commerce Clearing House, Inc., 1981.

B. *Farmers' Tax Guide: 1981 Edition Publication 225.* rev. 1981. Washington; D.C.: Department of the Treasury, Internal Revenue Service, 1981.

(NOTE: Internal Revenue Service regulations and publications change frequently. Always use the most current information available. Caution should be used when using materials more than one year old.)

C. Wheeler, Jon D. *Tax Desk Book for Farming and Ranching.* Englewood Cliffs, New Jersey: Institute for Business Planning, Inc., 1978.

D. *Revenue Act of 1978.* Report of the Committee On Finance, United States Senate. Washington, D.C: U.S. Government Printing Office, 1978.

E. *1981 Tax Angles in Special Areas.* Chicago, Illinois: Commerce Clearing House, Inc., 1980.

F. *How Capital Gains are Taxed Under the Revenue Act of 1978.* Chicago, Illinois: Commerce Clearing House, Inc., 1979.

G. *Tax Planning 1981.* Chicago, Illinois: Commerce Clearing House, Inc., 1980.

H. Osburn, Donald D., and Schneeberger, Kenneth C. *Modern Agriculture Management.* Reston, Virginia: Reston Publishing, Inc., 1978.

I. James, Sydney C., and Stoneberg, Everrett. *Farm Accounting and Business Analysis.* Ames, Iowa: Iowa State University Press, 1978.

J. *Your Federal Income Tax for Individuals: 1981 Edition Publication 17.* rev. Washington, D.C.: Department of the Treasury, Internal Revenue Service, 1981.

K. *Tax Guide for Small Business: 1981 Edition Publication 334.* rev. Washington, D.C.: Department of the Treasury, Internal Revenue Service, 1981.

INCOME TAX MANAGEMENT
UNIT IX

INFORMATION SHEET

I. Terms and definitions

A. Tax management--Year-round process where a cooperator is constantly making decisions which can make a large impact on the amount of taxes that will have to be paid at year's end

B. Tax planning--Summary of primary tax considerations in determining when, how to, and whether or not to conduct various business and personal transactions

C. Tax shelters--Tax-favored investments usually engaged in by a limited partnership, joint venture, or syndicate

(NOTE: Such investments frequently are concerned with a large amount of capital, high degree of risk, or involve sheltering ordinary income and funding retirement needs; thus, these investments are given beneficial tax treatment.)

D. Tax-option corporation--Corporation which has elected to avoid paying any corporate tax on its income; instead, the shareholders pay taxes on income proportionate to shareholding

(NOTE: Subchapter S corporations are specifically included.)

E. Estimated tax--Sum of the individual's estimated income and self-employment tax minus credits against the tax

F. Net operating loss--Excess of allowable business deductions over the sum of business gross income and nonbusiness net income

(NOTE: There are special rules that limit what you can deduct when figuring an NOL.)

G. Tax basis--Relating to taxable gains, that part of the sale price that represents the owner's investment in the property

(NOTE: Included is the original cost of the property plus the cost of capital improvements added during the period of ownership, adjusted by any amount of depreciation claimed.)

Example:	Original price (2-ton truck)	$10,000
	Cost of improvements (Bed and winch)	+$ 8,000
		$18,000
	Depreciation	-$ 3,000
	Tax basis	$15,000
	Selling price	$40,000
	Tax basis	-$15,000
	Taxable gain	$25,000

H. Amortization--Repayment of a loan with a regular series of payments over a specified period of time

INFORMATION SHEET

II. Purposes of tax management and tax planning

   A. To maximize after tax income

   B. To hold to a minimum tax liabilities resulting from transactions

   C. To possibly control tax if time and method of carrying out transactions is determined by the cooperator

   D. To establish proof of proper accounting and bookkeeping procedures if an IRS audit should be initiated

III. Steps in determining when to use income tax strategies

   A. Determine your normal income tax pattern for the past five years

   (NOTE: A cooperator who has a steady increase in income may be moving gradually into higher tax brackets. On the other hand, the trend could be downward or the income level may change little.)

   B. Select tax management methods which will help you come as close as possible to a normal tax pattern

   (NOTE: It is costly in terms of after-tax dollars to fluctuate among different tax brackets.)

   C. Think "taxes" during the entire year

   (NOTE: A good farm manager will be aware of taxes during all twelve months so that day-to-day decisions result in the greatest tax advantage consistent with maximum after tax income.)

   D. Use an income tax estimate worksheet

IV. Records and information needed to fill out an income tax estimate worksheet (Assignment Sheets #1 and #2)

(NOTE: An income tax estimate worksheet is a tool to determine expected tax liability. It is based on what has happened to date in an accounting year and on an estimate of what will happen for the remainder of the year. If farm records are complete and up-to-date, it is relatively easy to follow a format for a tax estimate.)

   A. Ordinary farm receipts

   B. Receipts from the sale of items purchased for resale

   C. Tax cost from the sale of resale items sold

   D. Amount of capital gains sales

   E. Amount of capital sales that do not qualify for capital gains

   F. Nonfarm income

INFORMATION SHEET

G. Farm expenses

H. Depreciation records

I. Amount of capital purchases

J. Personal exemptions, deductions, and the amounts of each

K. Federal oil and gas tax refunds

L. Investment credit information

(NOTE: Information should be included with depreciation records.)

M. Social Security information

N. Self-employment retirement programs

Examples: HR-10 or Keogh; IRA

O. Current year's tax tables

V. Special tax situations which can affect an individual's or farm business's tax bracket

(NOTE: These special situations may have significant tax implications.)

A. Change in type of business

Example: If a son is entering the business, a sole proprietorship may be changed to a partnership or corporation

B. Major business expansion

(NOTE: Enlarging the business usually means a large capital investment in both depreciable and nondepreciable property. It is important to know how fast these investments can be recovered, what the effect will be on cash flow, and whether capital gain can be created from future sales of the acquired property. There also may be investment credit and depreciation implications.)

C. Estate planning

Examples: Transfer of ownership from one generation to next; implications of gift, estate, and income taxes

D. Improvement in labor management practices

(NOTE: Increased efficiency in farm labor use often can be attained with better labor management practices.)

Example: Improved fringe benefits and bonus plans for key employees

INFORMATION SHEET

E. Tax advantages of leasing or renting major equipment as an alternative to outright purchase

F. Sale of capital items

Examples: Farm land; herd of dairy or breeding animals; mineral deposits

G. Planning for retirement

Example: Postpone income until retirement years by investing in an approved retirement plan

H. Farm investments versus nonfarm investments

(NOTE: Evaluate advantages and disadvantages of investing more in farm investments rather than nonfarm investments.)

VI. Tax management strategies used to increase or decrease income

(NOTE: Tax management strategies should only be used if consistent with other good farm management decisions. Regular farm management techniques should be brought to rely on tax management decisions. Strategies assume cooperator is a cash method taxpayer. Cooperator should consider strategies as a method of leveling income from year to year.)

A. To increase income

1. Do some off-farm or custom work
2. Forego election to expense cost of property acquired for use in trade or business
3. Use straight-line depreciation
4. Work with suppliers to pay bills after beginning of next fiscal year
5. Sell marketable grain and and livestock before end of fiscal year
6. Postpone expenditures and investments until after beginning of next fiscal year

B. To decrease income

1. Postpone some sales to next year
2. Make advance purchases of feed and fertilizer
3. Use deferred sales contracts
4. Use lowest useful life ACRS allows
5. Use election to expense the maximum dollars allowed of cost of property acquired for use in trade or business

INFORMATION SHEET

6. Buy needed machinery, equipment, and other supplies before end of the year to get investment credit and some depreciation

7. Use income averaging technique, if applicable

VII. Characteristics of investment tax credit

A. Direct deduction is allowed from the cooperator's tax liability of 6.0% or 10% for purchases of qualified assets bought after December 31, 1980

B. Effective incentive to invest in qualified equipment

C. Qualifying asset must have a useful life of at least three years to be eligible for any credit

(NOTE: The 1981 rate schedule for qualified assets using the Accelerated Cost Recovery System (ACRS) classes are:

Three-year property--6.0%

Five-year property or greater--10%

Credit effectiveness is derived from the fact that it reduces the equipment's purchase price which in effect increases cooperator's net cash flow after taxes.)

D. Property must be depreciable or amoritizable

E. Breeding livestock purchases may qualify for investement credit

(NOTE: The I.R.S. Farmer's Tax Guide should be consulted for limitations.)

F. Producers generally will be able to receive investment tax credit on farm machinery and equipment

Examples: Corn cribs; grain storage bins; milk storage refrigerators and freezer structures; potato storage facilities; propane gas tanks; refrigerated portion of a building; silos, storage facilities for grain or other commodities; gasoline storage tanks and pumps; water pumps; drain tiles or other improvements used to reclaim land for agricultural purposes which are depreciable; fences used to confine livestock; paved barnyards; wells providing water for farm livestock; contained feedlot facilities; underground watering systems; automatic egg houses; peanut sheds

INFORMATION SHEET

G. Buildings and their structural components generally are not eligible for investment tax credit

(NOTE: The I.R.S. has ruled that barns, stables, and poultry houses are ineligible; however, certain special-purpose structures are eligible.)

H. A special-purpose structure which qualifies for credit is one which uses or houses property used as an essential part of farming where the structure is so closely related to the use of the property that it is expected to be replaced when the property it houses is replaced

(NOTE: An indication of a special-purpose structure is that the structure cannot be used economically for any purpose other than that related to the property it houses.)

I. Investment tax credit is limited to the tax liability up to $25,000, plus 90% of the liability for tax in excess of $25,000 in 1982 and thereafter

Example: Cooperator has a qualified investment of $75,000 and a $3,750 tax liability for the year. Although 10% of the qualified investment is $7,500, the credit is limited to $3,750, the tax liability, in the year the asset is put to use; the remaining $3,750 may be carried back three years and/or carried forward 15 years.

J. If the amount of credit in any year exceeds the limit imposed, the excess is carried back three preceding tax years; if the amount is still unused in those years, it may be carried forward to the 15 succeeding years

K. If assets in which investment tax credit was taken are disposed of prior to the end of the estimated useful life used in computing credit, credit must be recomputed using the period of time the asset was actually held

(NOTE: Recapture involves increasing the tax for the year of disposition by any excess of the original credit. A disposition may occur when equitable interest in the property is sold, traded or exchanged. Recapture rule changes for property purchased after December 31, 1980. For each full year the property is held recapture is reduced by 2%.)

Example: Cooperator buys a piece of equipment for $9,000 on January 2, 1979 and determines the equipment has a useful life of 7 years. Investment credit amounting to $900 is taken on the equipment. On February 3, 1982, the cooperator sells the equipment and recapture must be computed

Original tax credit	$900
Recomputed ($9,000 x 3.3%)	-$297
Recapture amount	$603

The $603 is added to the tax liability for 1982

INFORMATION SHEET

L. Accurate records must be kept to claim these credits

(NOTE: Month and tax year in which the property was placed in service, estimated useful life used in calculating the credit, basis of the property, and date of acquisition and date of disposition must be kept. Cooperators who do not have records to substantiate credits may lose them.)

VIII. Characteristics of depreciation in tax management

(NOTE: Cost of improving a farm is not deductible. These costs are considered capital expenditures. Money spent on keeping the farm in operating condition is considered an ordinary expense and is deductible. Starting in 1982, you may elect to expense a maximum of $5,000 of the cost of property acquired for use in a trade or business. Cost of the asset is deducted over the expected useful life of an asset as an annual allowance for exhaustion, wear, and obsolescence of the property.)

A. Tax benefits arise because the cost of the asset is recovered over the useful life of the asset

(NOTE: The shorter the life assigned to the asset, the quicker the tax benefit is received.)

B. Purchased breeding, draft, or dairy livestock may be depreciated

C. Raised livestock may not be depreciated when cash method is used because all costs were deducted as paid expenses

D. Nonbreeding livestock in inventory may not be depreciated

(NOTE: For accrual method taxpayers, IRS regulations require all depreciable animals be either included or excluded from inventory. The cooperator may not include some and exlude others.)

E. Under the Economic Recovery Tax Act of 1981 salvage value will be ignored

(NOTE: Under the new law, depreciation is referred to as Accelerated Cost Recovery System (ACRS). ACRS creates five classes of assets, three of them applicable to agriculture. Consult the I.R.S. Farmer's Tax Guide for more information.)

IX. Characteristics of capital gains tax

(NOTE: The amount of capital gain or loss from the sale of a capital asset is the difference between the selling price and the adjusted basis. A sale or exchange of a capital asset will usually result in either a short-term or a long-term gain or loss depending on time the property is held.)

INFORMATION SHEET

A. Capital gains and losses are calculated on Forms 4797 and Schedule D

B. Under the Revenue Act of 1978, a noncorporate taxpayer may deduct from gross income 60% of the amount of any net capital gain for the taxable year; the remaining 40% of the net capital gain is included in gross income and is subject to tax

C. Under the Economic Recovery Tax Act of 1981, the maximum capital gains tax rate is reduced from 28% to 20%

D. Under the Economic Recovery Tax Act of 1981, a one-time $125,000 exclusion is provided for the sale of a principal residence for people age 55 or over

E. If an individual sells the house he/she is currently living in and buys a new house to live in which is at least equal in cost to the adjusted sale price of the old house and is used as the home in a period of 2 years prior to or 2 years after the date of sale of the old home, the gain may be postponed if all requirments are met

(NOTE: This is known as the *rollover provision*.)

F. When the price paid for the new home is less than the adjusted sale price of the old home, gain on the sale is recognized only to the extent that the adjusted sales price of the old house exceeds the individual's cost of purchasing new home

G. To determine gain or loss on the sale or disposition of property, the cooperator must not only know original basis but additions or subtractions that must be made for the time the property has been held

(NOTE: Additions or subtractions are known as *adjustments to the original, unadjusted basis*. Allowable deductions for depreciation will reduce the basis and the costs associated with casualty, or similar loss, are likewise deducted from the basis. Excluding property included in inventory, there are four types of original basis: cost, fair market value, transferred, and substituted. Before capital gains tax may be computed, basis on the property in question must be determined.)

H. To be eligible for capital gains treatment, livestock must be held for a minimum amount of time

Examples: Cattle and horses, regardless of age, held for draft, breeding dairy or sporting purposes must be held 24 months; other livestock, regardless of age, must be held 12 months

I. Other items eligible for capital gains treatment include depreciable property used in the farm business, real estate used in farming, unharvested crops on land used in farming, if the crop and land are sold, exchanged or involuntarily converted

INFORMATION SHEET

X. Factors in a declaration of estimated tax

   A. Estimated tax declarations are filed on Form 1040 ES

   B. Cooperator's whose gross income from farming is at least two-thirds of total estimated gross income for the taxable year may file Form 1040 ES at any time on or before January 15 if using the calendar year basis

   C. If the cooperator files and pays the full amount of the tax on or before March 1, he/she is excused from filing the declaration

   D. Cooperator's returns, on a fiscal year basis, will take the place of declarations if filed on the first day of the third month following the close of the fiscal year

   E. After having filed the declaration and the cooperator finds that income has substantially increased or decreased, an Amended Computation Schedule should be filed

   F. Tax indicated on the individual's declaration for the coming year may be paid in full with the first declaration's voucher or paid in installments

XI. Partnership and corporation tax considerations

   A. Partnership tax considerations

      1. Taxes are not paid, but taxable income must be computed so the partners may account for income on individual income tax forms

         (NOTE: Partners must include their share of profits and losses on the individual tax returns whether retained or distributed. Salaries paid partners are treated as income.)

      2. Partners are liable for tax on their shares of income even though no income may have been distributed

      3. Profits and losses of the organization are transmitted to the individuals involved

         (NOTE: Form 1065 must be filed.)

      4. A family partnership may be used to split income among family members, thus avoiding high tax brackets

         (NOTE: The cooperator must own capital interest in a partnership in which capital is a material income-producing factor. The capital may or may not be purchased.)

INFORMATION SHEET

B. Corporation tax considerations

(NOTE: Corporate income tax is imposed on corporations and certain associations, and trusts that have basic characteristics of corporations.)

1. A graduated tax rate structure is used

   Example: Under the Economic Recovery Tax Act of 1981, tax rates for small corporations will drop for tax years beginning in 1982 as shown in the table

   CORPORATION TAX TABLE

Taxable Income	1981	1982	1983
$ 0-25,000	17%	16%	15%
$25,000-50,000	20%	19%	18%
$50,000-75,000	30%	30%	30%

   (NOTE: The higher corporate tax brackets remain unchanged.)

2. Taxable income consists of the excess of corporate gross income less allowable business deductions

3. Are allowed to initiate qualified pensions or profit-sharing plans

   (NOTE: Larger amounts of tax sheltered income can be entered into the pension or profit sharing plan than can be placed using a self-employed retirement plan. Qualified pension and profit sharing plans allow the cooperator to deduct a specified amount from taxable income and invest it in tax-sheltered investments until retirement. Taxes are deferred until the funds are received at retirement.)

4. May pay all of the employees' medical and dental bills

   (NOTE: Premiums on insurance, expenditures for eyeglasses, chiropractors, nursing services, may be deducted and the cooperator does not have to include these items under personal income. This must be covered under an approved plan.)

5. Sub-chapter S tax-option corporations do not allow individual items of income and deductions to be passed through to shareholders

   (NOTE: Instead, taxable income is computed at the corporate level and shareholders are taxed directly on the income.)

6. To become a sub-chapter S tax-option corporation, the IRS must be notified on Form 2553

INFORMATION SHEET

7. Income of a sub-chapter S tax-option corporation is taxed through its shareholders in proportion to individual shareholdings

   (NOTE: Income is taxable whether distributed or not.)

XII. Types of special tax problems

A. Land clearing costs

(NOTE: Cooperators may deduct, rather than capitalize, expenditures incurred during the taxable year in the clearing of land to make it suitable for farming. This deduction is limited in any one taxable year to the lesser of $5,000 or 25% of taxable income from farming.)

1. Includes removal of trees, stumps, brush, moving of earth, diversion of streams and water systems
2. Land must be suitable to produce crops, vegetables, livestock or other livestock products
3. Specifically excluded are expenditures for purchase, construction, and installation of depreciable structures
4. Without the election, expenditures must be capitalized. Amoritization of costs is allowed only if a useful life is determinable

B. Soil and water conservation expenses

(NOTE: Cooperators have the option of deducting rather than capitalizing soil and water conservation expenses.)

1. Deduction is limited to 25% of the gross income derived from farming

   Example: A cooperator's gross income for the year is $18,500. Conservation expenses of $5,200 are incurred. Only $4,625 (25% x $18,500) may be deducted. The remaining $575 would be carried over to the next year's expenditures

   (NOTE: If expenditures exceed this limitation, excess may be carried over and deducted in succeeding years.)

2. To be eligible for this deduction, cooperator must be engaged in farming either as owner or tenant
3. Election is not available in the case of expenditures incurred in connection with items on which a depreciation charge may be taken

C. Net operating loss

1. Net losses are deductible from ordinary income

INFORMATION SHEET

2. No deductible casualty loss results from the destruction of a growing or standing crop because current deductions for seed, labor, fertilization and other production costs have already been included and the only loss is one of anticipated profits

3. Damage to land

   Examples: Loss of topsoil during a flood or sinking of land as a result of a sudden shifting of layers beneath the surface have been held as deductible losses

4. Livestock accounted for using the accrual basis may not be deducted as a casualty loss because losses are shown as a reduction of the year-end inventory

5. Cooperators may deduct a loss from their return for the immediately preceding tax year if they have sustained a loss from a disaster in which the President of the United States has warranted Federal disaster assistance

6. Monies secured from insurance for hail or fire on growing crops is included in gross income

   (NOTE: If crops are purchased to replace the destroyed crops, the income may be postponed until the replacement crops are sold.)

7. Cooperators pledging farm commodities as security for loans from the Commodity Credit Corporation may not consider the proceeds of the loan as income when received

   (NOTE: Income is not realized until the commodities, pledged for the loan, are sold. Taxpayers may elect to treat commodity credit loans as income when realized. Once election is taken, all future commodity credit loans will be considered income.)

(NOTE: Internal Revenue Service regulations and publications change frequently. Always use the most current information available. Caution should be used when using materials more than one year old.)

INCOME TAX MANAGEMENT
UNIT IX

ASSIGNMENT SHEET #1--COMPLETE AN INCOME TAX ESTIMATE WORKSHEET

NAME ______________________________ SCORE ____________________

The timing of your transactions can play an important part in balancing income between years, thus minimizing fluctuations in income and taxes. Cash basis operators may make an adjustment in the last few weeks of the year to bring income more in line with past and with future expectations.

Use the following income tax worksheets to assist you in completing an income tax estimate worksheet. After determining where you are financially, compare your findings with tax management objectives and make adjustments as necessary.

ASSIGNMENT SHEET #1

Accounting Period:
From ________
To ________

Income Tax Worksheet

I. Cooperator's Name ____________________ SS# ______________

II. Spouse's Name ____________________ SS# ______________

III. Exemptions:

IV. FARM INCOME AND EXPENSES

A. Income

1. Sales of Purchased Items

	Description	Amount of Sale	Cost	Profit or Loss
(1)	Cattle	$	$	$
(2)	Hogs			
(3)				
(4)				

*TOTAL PROFIT OR LOSS ________

2. Sales of Raised Items

Kind	Amount	Kind	Amount
(1) Cattle	$	(6)	$
(2) Calves		(7)	
(3) Sheep		(8)	
(4) Swine		(9)	
(5)		(10)	

*TOTAL RAISED SALES ________

3. Other Farm Income

Kind	Amount	Kind	Amount
(1) Machine Work	$	(5) CCC Loans under Election (or Forfeited)	$
(2) Patronage Divd.		(6) Fed. Gasoline Tax Refund	
(3) Non-Patronage		(7) State Gasoline Refund	
(4) Ag. Program Pmts.		(8) Other	
(a) Cash		(9)	
(b) Materials and Services		(10)	

*TOTAL OTHER ________

GROSS PROFITS ________

ASSIGNMENT SHEET #1

B. Expenses

Kind	Amount	Kind	Amount
(1) Hired Labor	$________	(12) Storage	$________
(2) Repairs, maint.	________	(13) Taxes	________
(3) Interest	________	(14) Insurance	________
(4) Feed Purchased	________	(15) Utilities	________
(5) Seeds, plants, pchd.	________	(16) Cash Rent	________
(6) Fert., lime, chem.	________	(17) Freight, Trucking	________
(7) Machine Hire	________	(18) Conserv. Exps.	________
(8) Supplies pchd.	________	(19) Land Clearing	________
(9) Breeding Fees	________	(20) Benefit plans	________
(10) Vet Medicine	________	(21) Misc.	________
(11) Fuel and Oil	________	(22) Misc.	________
		(23) Misc.	________
		TOTAL CASH EXPENSES	________

C. Depreciation Schedule

1. Items Purchased

a. Date b. Description c. Total Purchased Price

2. Items traded

a. Date b. New Item c. Old Item d. Total Boot Paid

3. Items Sold

a. Date b. Description c. Total Sale Price

4. Sale of Capital Items that Qualify for Capital Gain

5. Sale of Capital Items that do not Qualify for Capital Gain

ASSIGNMENT SHEET #1

V. NON-FARM INCOME

1. Wages (W-2 Forms)
   - a. Gross Wages ____________
   - b. Federal W/H ____________
   - c. State W/H ____________
   - d. FICA W/H ____________

2. Interest Income

a. Source	b. Amount
(1)	____________
(2)	____________
(3)	____________

3. Dividend Income

a. Source	b. Amount
(1)	____________
(2)	____________
(3)	____________

4. [illegible]te and Local Income Tax Refunds ______________________________
5. Alimony Received ______________________________
6. Pension and Annuity Income ______________________________
7. Rent and Royalty Income

	a. Kind	Total b. Amount	Depreciation c. or Depletion	Other d. Expenses
(1)				
(2)				
(3)				
(4)				

8. Other Income

	a. Kind	b. Amount		a. Kind	b. Amount
(1)			(3)		
(2)			(4)		

VI. ADJUSTMENTS TO INCOME

(Moving expenses, employee business expenses, payments to IRA or Keogh, interest penalty, alimony paid.)

1.
2.
3.
4.

ASSIGNMENT SHEET #1

VII. ITEMIZED DEDUCTIONS (PERSONAL)

1. Medical and Dental Expense
   a. Insurance Premiums ________________
   b. Medicine and Drugs ________________
   c. Doctors, nurses, dentists, etc. ________________
   d. Hospitals ________________
   e. Other ________________
   f. ________________

2. Taxes
   a. State and local income __________ d. General Sales ________________
   b. Real Estate ________________ e. Personal Property ______________
   c. State & Local Gasoline __________ f. Other ____________________

3. Interest
   a. Home Mortgage ________________
   b. Credit and charge cards ________________
   c. Other ________________
   d. ____________________

4. Contributions
   a. Cash contributions w/written evidence ________________
   b. Other (list)

5. Casualty or Theft Loss (explanation)

6. Misc. Deductions
   a. Union dues ________________
   b. Other ________________

VIII. CREDITS - WILL I QUALIFY FOR

a. Contributions to Candidates for Public Office ______________
b. Child and Dependent Care ______________
c. Residential Energy ______________
d. Federal Fuel Tax Credit: Type of Use __________ Fuel __________ Gallons
   1. Farming
   2.
e. Other ______________

IX. OTHER INFORMATION

ASSIGNMENT SHEET #1
INCOME TAX ESTIMATE WORKSHEET

		Amount to Date ____; ____	Estimated Rest of Year	Estimated Year's Total
RECEIPTS:				
Sales of products raised* and miscellaneous receipts:				
Cattle, hogs, sheep and wool, etc.		$		
Poultry, eggs and dairy products		$		
All crops sales		$		
Custom work, prorations and refunds agriculture program payments		$		
Total sales and other farm income	(1)	$		
Sales of purchased market livestock†		$		
Purchase cost (subtract)‡		$		
Gross profits on sales of purchased livestock†	(2)	$		
Gross farm profits (Item 1 + 2)	(3)	$		

FARM EXPENSES:

Hired labor	$	Fuel and oil	$
Repairs, maintenance		Storage	
Interest		Taxes	
Feed purchased		Insurance	
Seed, plants purchased		Utilities	
Fertilizers, lime		Cash rent	
Machine hire		Freight, trucking	
Supplies purchased		Conservation expenses	
Breeding fees		Other Business, Fees	
Veterinary Medicine		Other	

Total cash farm expenses	(4)	$		
Depreciation on machinery improvements, dairy and breeding stock	(5)	$		
Total deductions (Item 4 + 5)	(6)	$		
Self employment farm income (Item 3 less item 6)‡	(7)	$		
Net taxable gain from Schedule D (Sales of dairy and breeding stock, machinery and other capital exchanges)	(8)	$		
Taxable non-farm income	(9)	$		
Adjusted gross income (Item 7 + 8 + 9)	(10)	$		
Less ________: Excess itemized deductions** ($1,000 x ________ personal exemptions)***				
Total non-business deductions and exemptions	(11)	$		
Taxable income (Item 10 less item 11)	(12)	$		
Estimated income tax (calculated from applicable tax computation schedule)	(13)	$		
Estimated self-employment tax (Item 7 x current rate)	(14)	$		
TOTAL TAX (Item 13 + 14)	(15)	$		
Less Credits: allowable investment credit and carryover, gas tax, income tax withheld and estimated tax paid	(16)	$		
Estimated tax due (Item 15 less item 16)	(17)	$		
ESTIMATED STATE INCOME TAX DUE	(18)	$		

Date worksheet completed ______________, 19____

---

* For accrual method include sales of all livestock.

** Use itemized deductions if larger than zero bracket amount.

*** Exemptions for 1980, see current tax regulations for subsequent years.

† Omit for accrual method.

‡ For accrual method adjust for change in inventory and new livestock purchases.

Courtesy of and adapted from *Income Tax Management for Farmers*. Southern Farm Management Extension Publication No. 17. Cooperative Extension Service. University of Georgia College of Agriculture.

ASSIGNMENT SHEET #1
INCOME TAX ESTIMATE WORKSHEET

		Amount to Date ____, ___	Estimated Rest of Year	Estimated Year's Total
RECEIPTS:				
Sales of products raised* and miscellaneous receipts:				
Cattle, hogs, sheep and wool, etc.		$		
Poultry, eggs and dairy products		$		
All crops sales		$		
Custom work, prorations and refunds agriculture program payments		$		
Total sales and other farm income	(1)	$		
Sales of purchased market livestock†		$		
Purchase cost (subtract)‡		$		
Gross profits on sales of purchased livestock†	(2)	$		
Gross farm profits (Item 1 + 2)	(3)	$		

FARM EXPENSES:

Hired labor	$	Fuel and oil	$
Repairs, maintenance		Storage	
Interest		Taxes	
Feed purchased		Insurance	
Seed, plants purchased		Utilities	
Fertilizers, lime		Cash rent	
Machine hire		Freight, trucking	
Supplies purchased		Conservation expenses	
Breeding fees		Other Business, Fees	
Veterinary Medicine		Other	

Total cash farm expenses	(4)	$		
Depreciation on machinery improvements, dairy and breeding stock	(5)	$		
Total deductions (Item 4 + 5)	(6)	$		
Self employment farm income (Item 3 less item 6)‡	(7)	$		
Net taxable gain from Schedule D (Sales of dairy and breeding stock, machinery and other capital exchanges)	(8)	$		
Taxable non-farm income	(9)	$		
Adjusted gross income (Item 7 + 8 + 9)	(10)	$		
Less ________: Excess itemized deductions**				
($1,000 x ________ personal exemptions)***				
Total non-business deductions and exemptions	(11)	$		
Taxable income (Item 10 less item 11)	(12)	$		
Estimated income tax (calculated from applicable tax computation schedule)	(13)	$		
Estimated self-employment tax (Item 7 x current rate)	(14)	$		
TOTAL TAX (Item 13 + 14)	(15)	$		
Less Credits: allowable investment credit and carryover, gas tax, income tax withheld and estimated tax paid	(16)	$		
Estimated tax due (Item 15 less item 16)	(17)	$		
ESTIMATED STATE INCOME TAX DUE	(18)	$		

Date worksheet completed ____________, 19____

---

* For accrual method include sales of all livestock.

** Use itemized deductions if larger than zero bracket amount.

*** Exemptions for 1980, see current tax regulations for subsequent years.

† Omit for accrual method.

‡ For accrual method adjust for change in inventory and new livestock purchases.

Courtesy of and adapted from *Income Tax Management for Farmers*. Southern Farm Management Extension Publication No. 17. Cooperative Extension Service. University of Georgia College of Agriculture.

INCOME TAX MANAGEMENT
UNIT IX

ASSIGNMENT SHEET #2--USE A CHECKLIST OF ALLOWABLE DEDUCTIONS

NAME ______________________ SCORE ____________

A checklist of available deductions may help you determine if any deductions have been overlooked. Below is a list of typical farm expenses which are deductible.

Complete the checklist using your personal situation.

	YES	NO
Ginning		
Farm organization dues		
Trucking		
Tenant house expenses		
Labor hired		
Feeds purchased		
Feed grinding		
Seed and plants purchased		
Machine hire (threshing, silo filling, combining, etc.)		
Supplies (barrels, bags, twine etc.)		
Minor repairs (maintenance of buildings except dwellings, machines, fences)		
Breeding fees		
Fertilizers and lime		
Terracing land		
Soil and water conservation expenses		
Veterinary and medicine		
Gas and oil for farm work		
Storage and warehouses		
Taxes		
Insurance (except on dwelling)		
Water, electrical, telephone (farm purposes only)		
Rent of farm pasture		
Freight, yardage, trucking		
Small tools (useful life of 1 year or less)		
Board purchased for help		
Office supplies		
Travel expenses (farm share)		
Advertising of farm products		
Auto upkeep (farm share)		

# INCOME TAX MANAGEMENT
UNIT IX

ANSWERS TO ASSIGNMENT SHEETS

Assignment Sheet #1--Evaluated to satisfaction of instructor

Assignment Sheet #2--Evaluated to satisfaction of instructor

INCOME TAX MANAGEMENT
UNIT IX

TEST

NAME ________________________________ SCORE ____________________

1. Match terms associated with income tax management to the correct definitions. Write the correct numbers in the blanks provided.

______a. Year-round process where a cooperator is constantly making decisions which can make a large impact on the amount of taxes that will have to be paid at year's end

______b. Summary of primary tax considerations in determining when, how to, and whether or not to conduct various business and personal transactions

______c. Tax-favored investments usually engaged in by a limited partnership, joint venture, or syndicate

______d. Relating to taxable gains, that part of the sale price that represents the owner's investment in the property

______e. Excess of allowable business deductions over the sum of business gross income and nonbusiness net income

______f. Sum of the individual's estimated income and self-employment tax minus credits against the tax

______g. Corporation which has elected to avoid paying any corporate tax on its income; instead, the shareholders pay taxes on income proportionate to shareholding

______h. Repayment of a loan with a regular series of payments over a specified period of time

1. Tax-option corporation
2. Tax planning
3. Tax basis
4. Tax management
5. Net operating loss
6. Estimated tax
7. Tax shelters
8. Amortization

2. State purposes of tax management and tax planning. Write your answer in the blanks below and on the following page.

a. ____

____

b. ____

____

c. ______________________________

____

d. ______________________________

____

3. Arrange in order steps in determining when to use income tax strategies. Write in the correct blanks a "1" for the first step, a "2" for the second step, and so on.

_____a. Use an income tax estimate worksheet

_____b. Think "taxes" during the entire year

_____c. Determine your normal income tax pattern for the past five years

_____d. Select tax management methods which will help you come as close as possible to a normal tax pattern

4. List six records and information needed to fill out an income tax estimate worksheet. Write your answer in the blanks below.

a. ______________________________

b. ______________________________

c. ______________________________

d. ______________________________

e. ______________________________

f. ______________________________

5. List four special tax situations which can affect an individual's or farm business's tax bracket. Write your answer in the blanks below.

a. ______________________________

b. ______________________________

c. ______________________________

d. ______________________________

6. Distinguish between tax management strategies used to increase or decrease income. Write in the correct blanks an "I" for increase and a "D" for decrease.

_____a. Use deferred sales contracts

_____b. Use election to expense the maximum dollars allowed of cost of property acquired for use in trade or business

_____c. Do some off-farm or custom work

_____d. Use income averaging technique, if applicable

_____e. Forego election to expense cost of property acquired for use in trade or business

_____f. Buy needed machinery, equipment, and other supplies before end of the year to get investment credit and some depreciation

_____g. Use lowest useful life ACRS allows

_____h. Postpone expenditures and investments until after beginning of next fiscal year

_____i. Postpone some sales to next year

_____j. Use straight-line depreciation

_____k. Sell marketable grain and livestock before end of fiscal year

_____l. Work with suppliers to pay bills after beginning of next fiscal year

_____m. Make advance purchases of feed and fertilizer

7. Select from the following list characteristics of investment tax credit. Mark each correct answer with an "X" in the blanks provided.

_____a. Accurate records must be kept to claim these credits

_____b. A special-purpose structure which qualifies for credit is one which uses or houses property used as an essential part of farming where the structure is so closely related to the use of the property that it is expected to be replaced when the property it houses is replaced

_____c. Qualifying asset must have a useful life of at least three years to eligible for any credit

_____d. It is not necessary to recapture credit taken in previous years if the asset is sold prior to the end of its estimated useful life

_____e. Breeding livestock purchases may qualify for investment credit

_____f. Buildings and their structural components generally are not eligible for investment tax credit

_____g. Investment tax credit is limited to the tax liability up to $25,000, plus 90% of the liability for tax in excess of $25,000 in 1982 and thereafter

_____h. Direct deduction is allowed from the cooperator's tax liability of 6.0% or 10% for purchases of qualified assets bought after December 31, 1980

_____i. Property must be depreciable or amoritizable

_____j. Accurate records are not a necessity in order to claim the deductions ______k. If assets in which investment tax credit was taken are disposed of prior to the end of the estimated useful life used in computing credit, credit must be recomputed using the period of time the asset was actually held

______l. Producers generally will be able to receive investment tax credit on farm machinery and equipment

______m. Is an ineffective incentive to investment in qualified equipment

______n. If the amount of credit in any year exceeds the limit imposed, the excess is carried back three preceding tax years; if the amount is still unused in those years, it may be carried forward to the 15 succeeding years

______o. Effective incentive to invest in qualified equipment

8. Select from the list below characteristics of depreciation in tax management. Mark each correct answer with an "X" in the blanks provided.

______a. Nonbreeding livestock in inventory may be depreciated

______b. Salvage value is a major point in determining tax benefits for purchased assets

______c. Purchased breeding, draft, or dairy livestock may not be depreciated

______d. There are very little tax benefits that arise from taking depreciation

______e. Under the Economic Recovery Tax Act of 1981 salvage value will be ignored

______f. Nonbreeding livestock in inventory may not be depreciated

______g. Tax benefits arise because the cost of the asset is recovered over the useful life of the asset

______h. Purchased breeding, draft, or dairy livestock may be depreciated

______i. Raised livestock may not be depreciated when cash method is used because all costs were deducted as paid expenses

______j. The longer the life assigned to an asset, the quicker the tax benefit received

______k. Raised livestock may be depreciated when cash method is used

9. Select from the list below characteristics of capital gains tax. Mark each correct answer with an "X" in the blanks provided.

______a. Capital gains and losses are calculated on Forms 4797 and Schedule D

______b. Under the Economic Recovery Tax Act of 1981, the maximum capital gains tax rate is reduced from 28% to 20%

______c. To determine gain or loss on the sale or disposition of property, the cooperator must not only know original basis but additions or subtractions that must be made for the time the property has been held _____d. If an individual sells the house he/she is living in and buys a new house to live in which is at least equal in cost to the adjusted sale price of the old house and is used as the home in a period of 2 years prior to or 2 years after the date of sale of the old home, the gain may be postponed if all requirements are met

_____e. Under the Revenue Act of 1980, alternative tax for corporate capital gains is increased from 30% to 40%

_____f. To be eligible for capital gains treatment, livestock must be held for at least 36 months

_____g. Other items eligible for capital gains treatment include depreciable property used in the farm business, real estate used in farming, unharvested crops on land used in farming, if the crop and land are sold, exchanged or involuntarily converted

_____h. To be eligible for captial gains treatment, livestock must be held for a minimum amount of time

_____i. Under the Economic Recovery Tax Act of 1981, a one-time $125,000 exclusion is provided for the sale of a pricipal residence for people age 55 or over

_____j. Under the Revenue Act of 1978, alternative tax for corporate capital gains is reduced from 40% to 50%

_____k. Under the Revenue Act of 1978, a noncorporate taxpayer may deduct from gross income 60% of the amount of any net capital gain for the taxable year; the remaining 40% of the net capital gain is included in gross income and is subject to tax

_____l. When the price paid for the new home is less than the adjusted sale price of the old home gain on the sale is recognized only to the extent that the adjusted sales price of the old house exceeds the individual's cost of purchasing a new home

10. State four factors in a declaration of estimated tax. Write your answer in the blanks below and on the next page.

a. ____

____

____

b. ____

____

____

c. ____

____

____

d. ____

____

____

11. Distinguish between partnership and corporation tax considerations. Write in the correct blanks a "P" for partnership considerations and a "C" for corporation considerations.

_____a. Income of a sub-chapter S tax-option corporation is taxed through its shareholders in proportion to individual shareholdings

_____b. Profits and losses of the organization are transmitted to the individuals involved

_____c. To become a sub-chapter S tax-option corporation, the IRS must be notified on Form 2553

_____d. Sub-chapter S tax-option corporations do not allow individual items of income and deductions to be passed through to shareholders

_____e. Partners are liable for ta:. on their shares of income even though no income may have been distributed

_____f. May pay all of the employee's medical and dental bills

_____g. A graduated tax rate structure is used

_____h. Taxable income consists of the excess of corporate gross income less allowable business deductions

_____i. Taxes are not paid but taxable income must be computed so the partners may account for income on individual income tax forms

_____j. A family partnership may be used to split income among family members, thus avoiding high tax brackets

_____k. Are allowed to intitiate qualified pensions or profit-sharing plans

12. Distinguish among types of special tax problems. Write in the correct blanks an "L" for land clearing costs, an "S" for soil and water conservation expenses, and an "N" for net operating loss.

_____a. Cooperators pledging farm commodities as security for loans from the Commodity Credit Corporation may not consider the proceeds of the loan as income when received

_____b. Net losses are deductible from ordinary income

_____c. To be eligible for this deduction, cooperator must be engaged in farming either as an owner or tenant

_____d. Without the election, expenditures must be capitalized. Amoritization of cost is allowed only if a useful life is determinable _____e. Election is not available in the case of expenditures incurred in connection with items on which a depreciation charge may be taken

_____f. Specifically excluded are expenditures for purchase, construction, and installation of depreciable structures

_____g. Monies secured from insurance for hail or fire on growing crops is included in gross income

_____h. Livestock accounted for using the accrual basis may not be deducted as a casualty loss because losses are shown as a reduction of the year-end inventory

_____i. Includes removal of trees, stumps, brush, moving of earth, diversion of streams and water systems

_____j. Land must be suitable to produce crops, vegetables, livestock, or other livestock products

_____k. No deductible casualty loss results from the destruction of a growing or standing crop because current deductions for seed, labor, fertilization and other production costs have already been included and the only loss is one of anticipated profits

_____l. Damage to land

_____m. Cooperators may deduct a loss from their return for the immediately preceding tax year if they have sustained a loss from a disaster in which the President of the United States has warranted Federal disaster assistance

_____n. Deduction is limited to 25% of gross income derived from farming

13. Complete an income tax estimate worksheet.

14. Use a checklist of allowable deductions.

(NOTE: If any of the above activities have not been done before the test, ask the instructor when they should be finished.)

INCOME TAX MANAGEMENT
UNIT IX

ANSWERS TO TEST

1. a. 4
   b. 2
   c. 7
   d. 3
   e. 5
   f. 6
   g. 1
   h. 8

2. a. To maximize after tax income
   b. To hold to a minimum tax liabilities resulting from transactions
   c. To possibily control tax if time and method of carrying out transactions is determined by the cooperator
   d. To establish proof of proper accounting and bookkeeping procedures if an IRS audit should be initiated

3. a. 4
   b. 3
   c. 1
   d. 2

4. Answer should include any six of the following:
   a. Ordinary farm receipts
   b. Receipts from sale of items purchased for resale
   c. Tax cost from the sale of resale items sold
   d. Amount of capital gains sales
   e. Amount of capital sales that do not qualify for capital gains
   f. Nonfarm income
   g. Farm expenses
   h. Depreciation records
   i. Amount of capital purchases
   j. Personal exemptions, deductions, and the amounts of each
   k. Federal oil and gas tax refunds
   l. Investment credit information

m. Social Security information

n. Self-employment retirement programs

o. Current year's tax tables

5. Answer should include any four of the following:

   a. Change in type of business

   b. Major business expansion

   c. Estate planning

   d. Improvement in labor management practices

   e. Tax advantages of leasing or renting major equipment as an alternative to outright purchase

   f. Sale of capital items

   g. Planning for retirement

   h. Farm investments versus nonfarm investments

6.

a.	D	h.	I
b.	D	i.	D
c.	I	j.	I
d.	D	k.	I
e.	I	l.	I
f.	D	m.	D
g.	D		

7. a, b, c, e, f, g, h, i, k, l, n, o

8. e, f, g, h, i

9. a, b, c, [illegible], g, h, i, k, l

10. Answer should include any four of the following:

    a. Estimated tax declarations are filed on Form 1040 ES

    b. Cooperator's whose gross income from farming is at least two-thirds of total estimated gross income for the taxable year may file Form 1040 ES at any time on or before January 15 if using the calendar year basis

    c. If the cooperator files and pays the full amount of the tax on or before March 1, he/she is excused from filing the declaration

d. Cooperator's returns, on a fiscal year basis, will take the place of declarations if filed on the first day of the third month following the close of the fiscal year

e. After having filed the declaration and the cooperator finds that income has substantially increased or decreased, an Amended Computation Schedule should be filed

f. Tax indicated on the individual's declaration for the coming year may be paid in full with the first declaration's voucher or paid in installments

11. a. C
b. P
c. C
d. C
e. P
f. C
g. C
h. C
i. P
j. P
k. C

12. a. N
b. N
c. S
d. L
e. S
f. L
g. N
h. N
i. L
j. L
k. N
l. N
m. N
n. S

13. Evaluated to satisfaction of instructor

14. Evaluated to satisfaction of instructor

YEAR-END CLOSING AND ACCURACY CHECK OF RECORDS
UNIT X

UNIT OBJECTIVE

After completion of this unit, the cooperator should be able to complete a year-end update and closing of records. This knowledge will be evidenced through discussion of information sheets, and by completion of assignment sheets and unit test with a minimum of 85 percent accuracy.

SPECIFIC OBJECTIVES

After completion of this unit, the cooperator should be able to:

1. Define year-end closing of records.
2. Select from a list purposes of keeping accurate, up-to-date records.
3. Select from a list characteristics of inventory.
4. Arrange in order steps in finding and correcting errors in records.
5. Distinguish between uses of crop and feed records.
6. Describe methods of measuring and recording crop production.
7. Select from a list methods of recording feed consumption.
8. Select from a list purposes of production records.
9. State uses of prorating and depreciating methods associated with depreciation records.
10. State purposes for recording family living expenses.
11. Update a depreciation schedule.
12. Complete a year-end closing of records checklist.
13. Use a beginning-of-the-year checklist.

YEAR-END CLOSING AND ACCURACY CHECK OF RECORDS
UNIT X

SUGGESTED ACTIVITIES

I. Suggested activities for instructor:

  A. Provide each cooperator with objective sheet.

  B. Provide each cooperator with information and assignment sheets.

  C. Discuss unit and specific objectives.

  D. Discuss information and assignment sheets.

  E. Have cooperators bring their record books to class; use year-end closing checklist to complete record book in class.

  F. Provide each cooperator with the following forms:

    1. Input forms for computerized whole farm and detailed enterprise analysis.

    2. Spread sheets for net worth statement, income statement and whole farm business analysis, and measures of performance.

  G. Cooperators should complete the year-end closing of the record book in class. Instructor should assist with problems and start-up a new record book on scheduled farm visit.

  H. Assist cooperator in completing computerized year-end analysis input forms during scheduled farm visit.

  I. Give test.

  J. Critique test.

  K. Reteach, if necessary.

II. Instructional materials:

  A. Objective sheet

  B. Information sheet

  C. Assignment sheets

    1. Assignment Sheet #1--Update a Depreciation Schedule

    2. Assignment Sheet #2--Complete a Year-end Closing of Records Checklist

    3. Assignment Sheet #3--Use a Beginning-of-the-Year Checklist

D. Answers to assignment sheets

E. Test

F. Answers to test

III. Unit references:

A. Williams, Joseph E. and Casey, James E. *Farm and Ranch Management I Notes.* Stillwater: Department of Agricultural Economics/Oklahoma State University, 1979.

B. *Agricultural Management and Economics.* Columbia, Missouri: Instructional Materials Laboratory. Agricultural Education Series, Volume 9, Number 2, n.d.

C. *Record Keeping Helpers for Farmers.* Mankato, Minnesota: Adult Agriculture Teachers of Minnesota. Mankato Vocational Conference, August 15-17, 1972.

D. James, Sydney C., and Stoneberg, Everett. *Farm Accounting and Business Analysis.* Ames, Iowa: Iowa State University Press, 1976.

E. Reff, Tommy. *Farm Records--A Tool for Farm Management.* Fargo, North Dakota: Cooperative Extension Service/North Dakota State University, Farm Management Planning Guide Section VII: No 1, 1978.

F. *Georgia Farm Record Book.* Athens, Georgia: Farm Management Department of The Cooperative Extension Service/University of Georgia, College of Agriculture, n.d.

G. Hardin, Mike L. and Williams, Joseph E. *Oklahoma Young Farmer Record Book.* Stillwater: Oklahoma State Department of Vocational and Technical Education, revised 1981.

YEAR-END CLOSING AND ACCURACY CHECK OF RECORDS
UNIT X

INFORMATION SHEET

I. Year-end closing of records--An all-inclusive process of closing the current year's records, beginning new records, making corrections to erroneous entries, making adjustments in inventories, preparing for filing income taxes, and preparing for enterprise analysis; is used as a basis for making decisions pertaining to changes in short and long-term farm plans and the farm organization

II. Purposes of keeping accurate, up-to-date records

(NOTE: Accuracy is essential when records are used for the cooperator's own analysis purposes or studied by others. It also is important that these records be maintained and accounted for as an on-going process throughout the entire year.)

A. Is useful in legal and business transactions

Examples: Internal Revenue Service audit; credit acquisition

B. Avoids last-minute, end-of-the-year rush to make sure everything is accounted for

C. Provides accurate, up-to-date analysis of business performance

D. Reduces the chance that incorrect information could be used in reporting tax information

E. Indicates where strengths and weaknesses exist in the farm business

III. Characteristics of inventory

A. Inventory is a counting and valuation of all assets and liabilities of the farm business at one moment in time

B. Inventory is taken usually once each year

C. Inventory marks the end of the current accounting period and the start of the next accounting period

D. Inventory should be taken at, or as close as possible to, the same time each year

(NOTE: If inventory is taken on January 5, it would have to be adjusted upward or downward to reflect feed fed, weight, and value of livestock changes between December 31 and January 5 or the normal accounting date.)

INFORMATION SHEET

E. Inventory is useful in developing net worth statements, credit acquisition, whole farm and enterprise analysis, and cash flow projections

(NOTE: Usefulness of inventories depends on accuracy and detail.)

IV. Finding and correcting errors in records

A. Check all mathematical calculations

B. Determine the most likely places for errors to occur

(NOTE: Most errors occur in the feed fed records although errors can occur in all areas.)

C. Check to see that transferrals of original figures match those on the actual records

D. Correct any inaccuracies or discrepancies found

(NOTE: Beginning and ending inventory must be corrected if found to be inaccurate.)

V. Uses of crop and feed records

(NOTE: Production per acre may be determined from the Crop Record Form and the Crop Production Summary Forms. Although yields are very important, costs must be determined for proper comparison. Higher yields normally would be associated with higher production costs; however, when compared on a per bushel or ton basis, per unit costs are quite frequently lower because of the spreading of fixed costs over increased units of production.)

A. Crop record

1. Determines production per acre

2. Evaluates efficiencies

3. Determines feed supply available

4. Projects cash flow

B. Feed records

(NOTE: Feed records may be determined on Crop and Feed Balance Form.)

INFORMATION SHEET

1. May determine, using yield estimates, the amount of feed which is available to be fed

   (NOTE: If estimates are high, feed fed is overestimated; this indicates a lower level of feed efficiency in livestock. On the reverse side, low yield estimates cause estimates of feed available to be fed to be underestimated; this would indicate livestock to be more efficient in feed utilization than they actually are. Yield and feed records are independent.)

2. May determine sources of feed supplied

3. Should account for all feed

4. May determine total feed consumed by all livestock

VI. Methods of measuring and recording crop production

(NOTE: Methods of recording crop production vary with the crop in question and the appropriate method of counting.)

A. Grains

1. Measured at harvest

   (NOTE: Adjustments will have to be made if harvest moisture is a problem. This will not usually be a problem in most grains, except corn. Then, merely allow the corn to settle before taking the measurement.)

2. Measured by volume

B. Silage production in stacks or piles

1. Measured only after the stack has been allowed to settle

2. Measured by calculating volume and multiplying by weight per cubic foot

C. Hay

1. Measured at harvest

2. Measured by several methods

   (NOTE: Since hay is harvested using a variety of methods, quantities are more difficult to measure.)

   Examples: Baled hay is counted, often by using the counter on the baler; round baler uses count or weight

INFORMATION SHEET

3. Inflation or deflation of inventories may occur if higher or lower yields are made

   (NOTE: This makes farm income erroneously high or low depending whether the error is made at the beginning or end of the accounting period.)

VII. Methods of recording feed consumption

(NOTE: Most of the items discussed may be found in the Supplemental Records Section in the *Oklahoma Young Farmer Record Book*. Purchased feeds information may be obtained from the Expense Section; any additional information may be found in the Supplemental Records Section.)

A. Convert feed to bushel or weight amounts so amounts reported on inventory are the same as those on feed purchased

B. Adjust dry roughages to an air-dry basis

C. Adjust silage weights fed to compensate for varying moisture content

(NOTE: Dry matter content of silos will be the same regardless of moisture content and weight of the silage.)

D. Determine number of pasture days

(NOTE: This will reflect the number of animal days that full roughage feed was obtained from pasture. A rule-of-thumb formula for determining Animal Unit Months (AUMs) is: 30 pasture days = 1 AUM.)

Example: If beef cattle were grazing but still being fed one-third ration of dry roughage, cooperators would record only 20 pasture days for a 30-day period (2/3 x 30)

VIII. Purposes of production records

A. To show relative efficiency of various farm enterprises

B. To reflect enterprise efficiency trends over time

C. To compare efficiency of enterprises to area farmers

D. To help make accurate observations and management decisions

(NOTE: The Livestock Inventory Form is used to record total livestock numbers once a year. The Livestock Production Summary Form is used for individual enterprises to calculate inventories. Acquisitions will equal disappearance in number, and not value, if livestock numbers have been recorded properly.)

INFORMATION SHEET

E. To check livestock physical and time data

(NOTE: Calving, farrowing, or lamb drop percentage, which may be derived from this record, can directly affect herd, pen, or flock profitability.)

F. To obtain useful information from mortality records

Example: If a high mortality figure is obtained for the year in question, this could explain decreased earnings or management, disease, or other production problems indicated by the cooperator's income statement

IX. Uses of prorating and depreciating methods associated with depreciation records (Assignment Sheet #1)

(NOTE: Depreciation schedules will need to be updated annually. Annual depreciation should be subtracted from last year's value to give the current estimate of machinery, equipment, building, and livestock value.)

A. Prorating methods will have to be used to obtain an accurate value of assets in question, if assets have been disposed of or purchased during the year

Example: Using a straight-line method of calculating depreciation, if an asset is acquired during the year, only half of the first full year's depreciation is deductible for that year. In the final year, the other half will be recovered

B. Depreciation methods may have a substantial impact on taxable income in any one year

Example: In a year of average income or low income, large depreciation charges may give false indications of how the cooperator is actually doing. Faster write-off methods reduce income, and thus, reduce income taxes

X. Purposes for recording family living expenses

(NOTE: Family Living Forms in the *Oklahoma Young Farmer Record Book* are used for recording family living expenditures. For an accuracy check, the total of columns 1 through 20 should equal the same of the total cost column.)

A. Is useful in providing information for future budgeting efforts and income tax preparation

B. Is helpful in developing wiser expense patterns

C. Is a necessity if trying to keep expenses at a certain level

YEAR-END CLOSING AND ACCURACY CHECK OF RECORDS
UNIT X

ASSIGNMENT SHEET #1--UPDATE A DEPRECIATION SCHEDULE

NAME________________________________ SCORE ______________

Make year-end adjustments to the machinery and equipment schedules, Forms 3.1 and 3.2, as of January 2, 1982. Use the information below and the forms on the next two pages.

A. 1-2-78: Purchased new 1/2-ton pickup truck for $5,900, cash basis. Salvage value is estimated at $1,000. Estimated useful life is five years. Method of calculating depreciation is straight-line

B. 6-1-79: Purchased used tractor $28,000 cash basis. Salvage value is estimated at $5,000. Estimated useful life is eight years. Depreciation method used is double declining balance

C. 7-1-80: Purchased new disk. Cash basis was $2,500. Salvage value is estimated at less than 10% of cost. Useful life is estimated at seven years. Straight-line method of depreciation is used

D. 1-2-81: Purchased new planter for $9,800. Estimated useful life five years. Straight-line method of depreciation is used. Salvage value is ignored.

E. 11/29/81: Traded 1/2-ton pickup for new 3/4-ton, 4-wheel drive pickup. List price on new pickup was $12,288.00. Traded for $10,000.00 cash difference and old pickup. Estimated useful life is three years. Salvage value is ignored. Method of calculating depreciation is ACRS percentage allowance.

ASSIGNMENT SHEET #1

FORM 3.1 **PAGE** 1 of 2 **DEPRECIATION SCHEDULE:** ____________________ **MACHINERY AND EQUIPMENT**

LINE	DATE ACQUIRED	ITEM DESCRIPTION KIND OF MACHINE, MAKE, MODEL, SIZE	ID. NO.	NEW OR USED	INVEST. CREDIT	COST INFORMATION			ADDITL. FIRST YEAR DEPREC.	SALVAGE VALUE	DEPRECIATION INFORMATION					LINE
						REM'NG BOOK VALUE OF TRADE-IN	CASH. DIFF. PAID	TOTAL COST BASIS			BALANCE FOR REGULAR DEPREC.	LIFE	METHOD	ANNUAL DEPREC % or $	DEPREC. TAKEN IN PRIOR	
1	1/2/78	½ Ton Pickup		N	393^{53}			5900^{00}		1000^{00}	4900^{00}	5	SL	980^{00}	980^{00}	1
2	6/1/79	Tractor		U	2800^{00}			28000^{00}		5000^{00}	23000^{00}	8	DDB	25%	-0-	2
3	7/1/80	Disk		N	250^{00}			2500^{00}		-0-	2500^{00}	7	SL	357^{14}	-0-	3
4	1/2/81	Planter														4
5	11/29/81	¾ Ton 4WD Pickup														5
6																6
7																7
8																8
9																9
10																10
11																11
12																12
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21																21
22																22
23																23
24																24
25		TOTALS FOR THIS PAGE														25
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	

ASSIGNMENT SHEET #1

FORM 3.2 **PAGE** 2 of 2 **DEPRECIATION SCHEDULE:** ______________ **MACHINERY AND EQUIPMENT (CONT'D)**

LINE	START 19 79	END 19 79		END 19 80		END 19 81		ESTIMATED CURRENT CASH VALUE			
	REMAINING BK. VAL. AT START OF YEAR	DEPREC. THIS YEAR	REMAINING BOOK VALUE	DEPREC. THIS YEAR	REMAINING BOOK VALUE	DEPREC. THIS YEAR	REMAINING BOOK VALUE	START 19__	END 19__	END 19__	END 19__
1	4920^{00}	980^{00}	3940^{00}	980^{00}	2960^{00}						
2	-0-	4083^{33}	23916^{67}	5979^{16}	17937^{51}						
3	—	—	—	178^{57}	2321^{43}						
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											
19											
20											
21											
22											
23											
24											
25	4920^{00}	5063^{33}	27856^{67}	7137^{73}	23218^{94}						
	16	17	18	19	20	21	22	23	24	25	26

YEAR-END CLOSING AND ACCURACY CHECK OF RECORDS
UNIT X

ASSIGNMENT SHEET #2--COMPLETE A YEAR-END CLOSING OF RECORDS CHECKLIST

NAME ______________________ SCORE ____________

Many errors can be avoided by using a systematic approach for the year-end closing of the record book. Complete year-end closing of your record book using the following checklist to help avoid those errors. Write the date completed in the "yes" box. Mark an "X" in the appropriate "no" box if the item is not completed.

	YES	NO
1. Complete the year-end totals on the cash flow summary (Form 6.2)		
2. Complete hired labor records for individual employees (Form 4.7) (NOTE: Tax accountant will need hired labor records before January 31 to file FICA withholding taxes and employee W-2 forms.)		
3. Complete summary of family living records (Section 5)		
4. Complete depreciation schedule (Section 3)		
5. Complete ending inventory (Section 3)		
6. Complete year-end credit records (Section 4) a. Ending loan balances		
b. Accrued interest		
c. Unpaid bills		
d. Open account balances		
e. Accounts receivable, ending balances, and accrued interest		
f. Ending savings account balance		
7. Complete supplemental records (Section S)		
8. Complete ending net worth statement (Forms 6.3 and 6.4)		
9. Complete spread sheet for net worth statement		
10. Complete income statement (Form 6.5)		

ASSIGNMENT SHEET #2

	YES	NO
11. Complete a comparative income statement analysis sheet		
12. Complete whole farm business analysis (Form 6.6)		
13. Complete measures of performance (Form 6.7)		
14. Complete spread sheet for whole farm business analysis and measures of performance		
15. (Optional) Complete forms for computerized whole farm and detailed enterprise analysis		

16. Date checklist completed ______________ 19 _____

YEAR-END CLOSING AND ACCURACY CHECK OR RECORDS
UNIT X

ASSIGNMENT SHEET #3--USE A BEGINNING-OF-THE-YEAR CHECKLIST

NAME ______________________________ SCORE ______________

To avoid many year-end closing problems, it is important the cooperator start each year with the correct balances and inventory in the new record book. Use the following checklist to help avoid these problems. Write the date completed in the "yes" box. Mark an "X" in the appropriate "no" box if item is not completed.

	YES	NO
1. Beginning inventory (Section 3) (NOTE: Transfer totals from previous year's ending inventory.)		
2. Beginning depreciation schedule (Section 3) (NOTE: Forward information from previous year's depreciation schedule.)		
3. Beginning credit records (Section 4) a. Beginning loan balances (NOTE: This includes forward ending loan balances, unpaid bills, open accounts, and accrued interest from previous year's ending balances.)		
b. Beginning accounts receivable balances (NOTE: Forward accounts receivable, accrued interest, and savings account balances from previous year's ending balances.)		
4. Beginning cash balance on cash flow summary form (Form 6.1) (NOTE: Forward from ending cash balance on Form 6.2 from the previous year.)		
5. Beginning net worth statment (Forms 6.3 and 6.4) (NOTE: Forward amounts from previous year's ending net worth statement.)		
6. If applicable, forward previous year's ending balance for family living to family living summary (Section 5)		

7. Date checklist completed ____________ 19 _____

YEAR-END CLOSING AND ACCURACY CHECK OF RECORDS
UNIT X

ANSWERS TO ASSIGNMENT SHEETS

Assignment Sheet #1--See the next two pages

Assignment Sheet #2--Evaluated to satisfaction of instructor, but all answers should be "yes"

Assignment Sheet #3--Evaluated to satisfaction of instructor, but all answers should be "yes"

ANSWERS TO ASSIGNMENT SHEET #1

FORM 3.1 **PAGE** 1 of 2 **DEPRECIATION SCHEDULE:** ____________ **MACHINERY AND EQUIPMENT**

LINE	DATE ACQUIRED	ITEM DESCRIPTION KIND OF MACHINE, MAKE, MODEL, SIZE	ID. NO.	NEW OR USED	INVEST. CREDIT	COST INFORMATION			ADDITL. FIRST YEAR DEPREC.	SALVAGE VALUE	DEPRECIATION INFORMATION					LINE
						REM'NG BOOK VALUE OF TRADE-IN	CASH. DIFF. PAID	TOTAL COST BASIS			BALANCE FOR REGULAR DEPREC.	LIFE	METHOD	ANNUAL DEPREC. % or $	DEPREC. TAKEN IN PRIOR	
1	1/2/78	½ Ton Pickup		N	393^{53}	recap196	^{76} (1981)	5900^{00}		1000^{00}	4900^{00}	5	SL	980^{00}	980^{00}	1
2	6/1/79	Tractor		U	2800^{00}			28000^{00}		5000^{00}	23000^{00}	8	%DB	25%	-0-	2
3	7/1/80	Disk		N	250^{00}			2500^{00}		-0-	2500^{00}	7	SL	357^{14}	-0-	3
4	1/2/81	Planter		N	980^{00}			9800^{00}		—	9800^{00}	5	SL	1960^{00}	-0-	4
5	11/29/81	¾ Ton 4WD Pickup		N	723^{70}	2061^{67}	10000^{00}	12061^{67}		—	12061^{67}	3	%	ACRS	-0-	5
6																6
7																7
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24																24
25		TOTALS FOR THIS PAGE														25
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	

ANSWERS TO ASSIGNMENT SHEET #1

FORM 3.2 **PAGE** 2 of 2 **DEPRECIATION SCHEDULE:** ______________ **MACHINERY AND EQUIPMENT (CONT'D)**

LINE	START 19 79	END 19 79		END 19 80		END 19 81		ESTIMATED CURRENT CASH VALUE			
	REMAINING BK. VAL. AT START OF YEAR	DEPREC. THIS YEAR	REMAINING BOOK VALUE	DEPREC. THIS YEAR	REMAINING BOOK VALUE	DEPREC. THIS YEAR	REMAINING BOOK VALUE	START 19__	END 19__	END 19__	END 19__
1	4920^{00}	980^{00}	3940^{00}	980^{00}	2960^{00}	898^{33}	—	traded 11-29-81		recap I.C.	196^{76}
2	-0-	4083^{33}	23916^{67}	5979^{16}	17937^{51}	4484^{37}	13453^{14}				
3	—	—	—	178^{57}	2321^{43}	357^{14}	1964^{29}				
4	—	—	—	—	—	980^{00}	8820^{00}				
5	—	—	—	—	—	3015^{41}	9046^{26}				
6											
7											
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17											
18											
19											
20											
21											
22											
23											
24											
25	4920^{00}	5063^{33}	27856^{67}	7137^{73}	23218^{94}	9735^{25}	33283^{69}				
///	16	17	18	19	20	21	22	23	24	25	26

YEAR-END CLOSING AND ACCURACY CHECK OF RECORDS
UNIT X

TEST

NAME ______________________________ SCORE ______________

1. Define year-end closing of records. Write your answer in the space below.

2. Select from the list below purposes of keeping accurate, up-to-date records. Mark each correct answer with an "X" in the blanks provided.

______a. Is useful in legal and business transactions

______b. Increases the chance that incorrect information could be used in reporting tax information

______c. Indicates where strengths and weaknesses exist in the farm business

______d. Used to check on employee expenditures

______e. Avoids last-minute, end-of-the-year rush to make sure everything is accounted for

______f. Reduces the chance that incorrect information could be used in reporting tax information

______g. Provides accurate, up-to-date analysis of business performance

3. Select from the list below characteristics of inventory. Mark each correct answer with an "X" in the blanks provided.

______a. Inventory is taken almost every day

______b. Inventory marks the end of the current accounting period and the start of the next accounting period

______c. Inventory should be taken at, or as close as possible to, the same time each year ______d. Inventory is a counting and valuation of all assets and liabilities of the farm business at one moment in time

______e. Inventory has very little analytical value

______f. Inventory is useful in developing net worth statements, credit acquisition, whole farm and enterprise analysis, and cash flow projections

______g. Inventory is taken usually once each year

______h. Inventory does not mark the start of the next accounting period and the end of the current accounting period

4. Arrange in order steps in finding and correcting errors in records. Write in the correct blank a "1" for the first step, a "2" for the second step, and so on.

______a. Correct any inaccuracies or discrepancies found

______b. Determine the most likely places for errors to occur

______c. Check to see that transferrals of original figures match those on the actual records

______d. Check all mathematical calculations

5. Distinguish between uses of crop and feed records. Write in the correct blanks a "C" for crop records and an "F" for feed records.

______a. May determine, using yield estimates, the amount of feed which is available to be fed

______b. Determines production per acre

______c. Determines feed supply available

______d. Projects cash flow

______e. May determine total feed consumed by all livestock

______f. Evaluates efficiencies

______g. Should account for all feed

______h. May determine sources of feed supplied

6. Describe methods of measuring and recording crop production. Write your answer in the space provided here and on the next page.

____

____

____

____

7. Select from the list below methods of recording feed consumption. Mark each correct answer with an "X" in the blanks provided.

_____a. Write it on the barn wall; this is better than nothing

_____b. Convert feed to bushel or weight amounts so amounts reported on inventory are the same as those on feed purchased

_____c. Determine number of pasture days

_____d. Adjust dry roughages to an air-dry basis

_____e. Guess at weights because it really doesn't make that much difference

_____f. Adjust silage weights fed to compensate for varying moisture content

8. Select from the list below purposes of production records. Mark each correct answer with an "X" in the blanks provided.

_____a. To show relative efficiency of various farm enterprises

_____b. To allow correction of inaccuracies

_____c. To reflect enterprise efficiency trends over time

_____d. To give you something to look over during the winter

_____e. To be used with net worth analysis

_____f. To compare efficiency of enterprises to area farmers

_____g. To help make accurate observations and management decisions

_____h. To check livestock physical and time data

_____i. To obtain useful information from mortality records

9. State uses of prorating and depreciating methods associated with depreciation records. Write your answer in the blanks below.

   a. ______________________________

   ____

   b. ______________________________

   ____

10. State purposes for recording family living expenses. Write your answer in the blanks below.

    a. ______________________________

    ____

    b. ______________________________

    ____

    c. ______________________________

    ____

    ____

    ____

11. Update a depreciation schedule.

12. Complete a year-end closing of records checklist.

13. Use a beginning-of-the-year checklist.

    (NOTE: If any of the above activities have not been done before the test, ask your instructor when they should be finished.)

YEAR-END CLOSING AND ACCURACY CHECK OF RECORDS
UNIT X

ANSWERS TO TEST

1. An all-inclusive process of closing the current year's records, beginning new records, making corrections to erroneous entries, making adjustments in inventories, preparing for filing income taxes, and preparing for enterprise analysis; is used as a basis for making decisions pertaining to changes in short and long-term farm plans and the farm organization
2. a, c, e, f, g
3. b, c, d, f, g
4. a. 4
   b. 2
   c. 3
   d. 1
5. a. F
   b. C
   c. C
   d. C
   e. F
   f. C
   g. F
   h. F
6. Answer should include:
   a. Grains
      1. Measured at harvest
      2. Measured by volume
   b. Silage production in stacks or piles
      1. Measured only after the stack has been allowed to settle
      2. Measured by calculating volume and multiplying by weight per cubic foot
   c. Hay
      1. Measured at harvest
      2. Measured by several methods
      3. Inflation or deflation of inventories may occur if higher or lower yields are made

7. b, c, d, f

8. a, c, f, g, h, i

9. a. Prorating methods will have to be used to obtain an accurate value of assets in question, if assets have been disposed of or purchased during the year

   b. Depreciation methods may have a substantial impact on taxable income in any one year

10. a. Is useful in providing information for future budgeting efforts and income tax preparation

    b. Is helpful in developing wiser expense patterns

    c. Is a necessity if trying to keep expenses at a certain level

11. Evaluated to satisfaction of instructor

12. Evaluated to satisfaction of instructor

13. Evaluated to satisfaction of instructor